

























































# TECHNOLOGY

## REVIEW

*May 1959*

Maneuver	Chemical	Fission	Isotope Decay	Arc Heating	Magneto-Plasma	Ion	Solar Heating	Solar Sail
Escape from Orbit								
Interplanetary Transfer								 *
Change of Plane								 *
Orientation								
Trajectory Corrections								 *
Target Approach								 *
Capture								



Suitable



Acceptable



Undesirable



One-way only

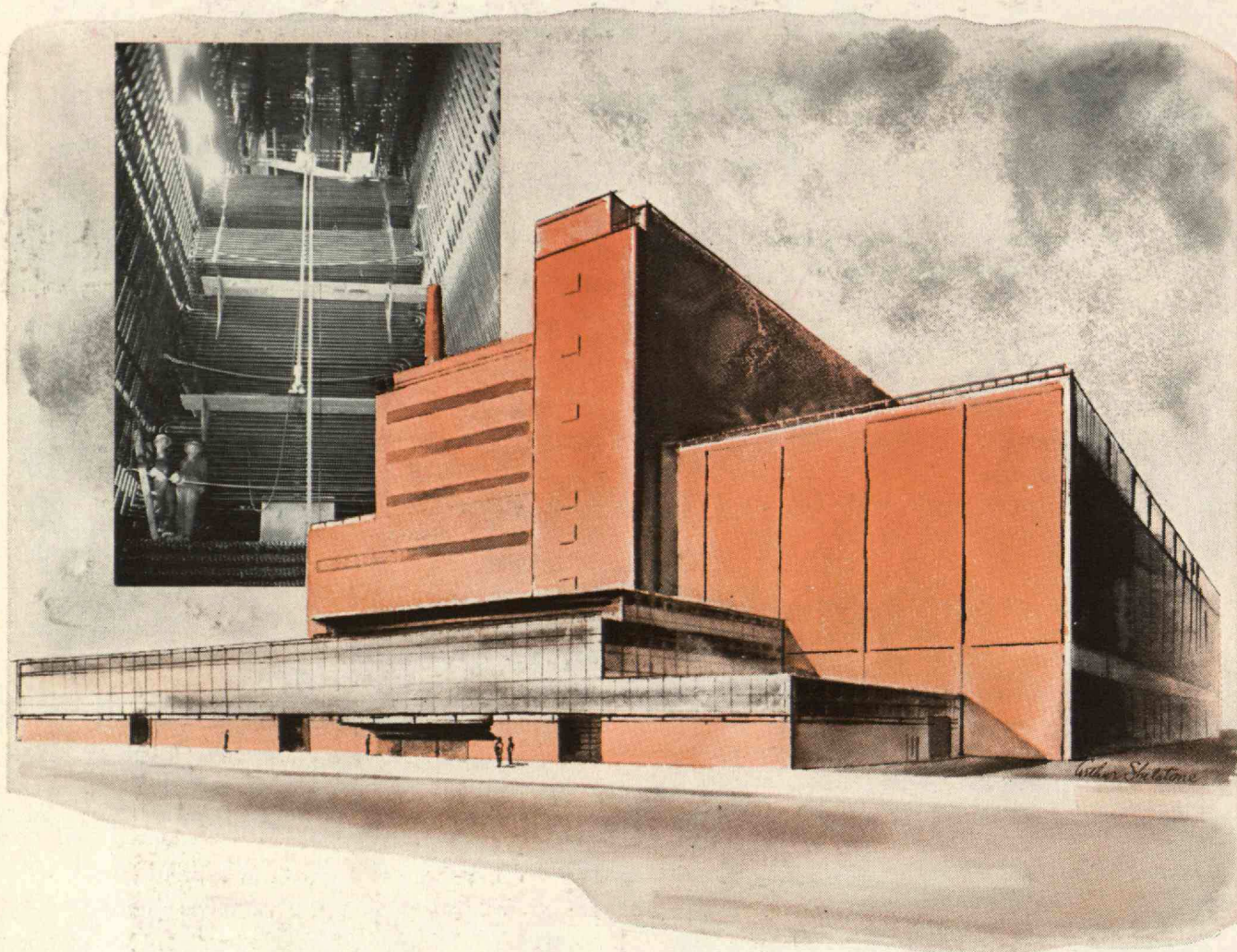
# technology review

Published by MIT

This PDF is for your personal, non-commercial use only.  
Distribution and use of this material are governed by copyright law.  
For non-personal use, or to order multiple copies please email  
[permissions@technologyreview.com](mailto:permissions@technologyreview.com).



"CREATIVE ENGINEERING" POINTS THE WAY TO HIGHER POWER STATION EFFICIENCY



## C-E invades new regions of steam pressure and temperature for world's most efficient power station

The completion of the plant pictured above . . . the Eddystone Station of the Philadelphia Electric Company . . . will mark an outstanding achievement in electric power generation.

Scheduled to go into service late this year, Eddystone will produce steam at the highest pressure and temperature ever used in commercial power practice—5000 lb per sq in and 1200°F. By so doing, it is expected to generate electricity at a fuel rate of less than two-thirds of a pound of coal per kilowatt-hour—a rate which will establish a new world's record for power station efficiency.

Eddystone's steam will be produced by a C-E Sulzer Monotube Steam Generator, a small portion of which is shown in the photo inset. This 14-story-high boiler is comprised essentially of about 170 miles of small-diameter tubing, much of it made of chromium and nickel alloys. At full load, its twin furnaces will consume about 100 tons of pulverized coal an hour—40 average carloads per day.

Creative Engineering is the C-E approach to providing the most advanced designs of boilers for all steam requirements—from those of small industrial and institutional plants to the largest utility power stations.

"CREATIVE ENGINEERING" is the reason for the leadership attained by C-E products. The products which bear this mark of leadership include:

all types of steam generating, fuel burning and related equipment • nuclear power systems • paper mill equipment • pulverizers • flash drying systems • pressure vessels • soil pipe

## COMBUSTION ENGINEERING

Combustion Engineering Building, 200 Madison Avenue, New York 16, N. Y.



C-204



THE TIME INDICATOR UNIT

# accurate to 1 second in 12 days



## **TIMES MODEL TS-3 CHRONOMETER**

Program timer, pulse generator and clock. Timing assemblies, driven by the clock motor, provide momentary contact closings at rate of

• **ONCE A SECOND • ONCE A MINUTE • ONCE AN HOUR**

also optional frequency or pulse outputs as specified in range between 10 and 1000 cps.

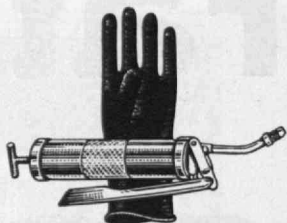
**PRICE: \$950.00, F.O.B. Factory.**

Optional frequency output, \$50.00 each.

Write for details.

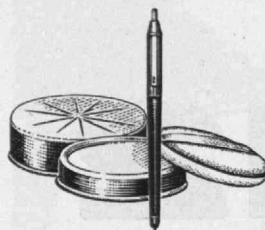
## **TIMES FACSIMILE CORPORATION**

540 West 58th Street, New York 19, N. Y.



*... greases or gloves*

*... pens or powders*



*... varnish or vases*

## Better Products begin with CABOT!

Where do you begin to look for that elusive "something" that gives you a better product?

Where else but at the beginning?

How else but with the wisest, most economical choice of raw materials?

We can help you there. Better raw materials—for an immense variety of products—are Cabot's business.

### WHICH OF THESE CABOT MATERIALS CAN HELP YOUR PRODUCT?

**CABOT CARBON BLACKS** ... more than 50 different grades of channel, furnace and thermal blacks for use by the rubber, printing ink, paint, varnish, lacquer, enamel, plastics, paper, phonograph record, battery and other industries.

**CAB-O-LITE® (wollastonite)** ... as a paint pigment, this versatile, uniform calcium metasilicate has more desirable properties than other extenders used singly or in combination. Excellent for all types of paint, and for quality improvement of all types of ceramics.

**CAB-O-SIL®** ... this unique airborne silica, in extremely small quantities, greatly improves a host of products. Remarkable for its unusual combination of properties, it's equally effective as a thixo-

tropic, thickening, gelling, suspending, flatting, reinforcing, anti-caking and antislip agent. Used in plastics, lubricating oils, greases, paints, varnishes, lacquers, rubber, sulfur, insecticides, pharmaceuticals, cosmetics, many other products.

**PT® PINE TAR PRODUCTS** ... these versatile quality controlled materials improve the performance of a wide variety of products, including: rubber, paint, cordage, oakum and insecticides.

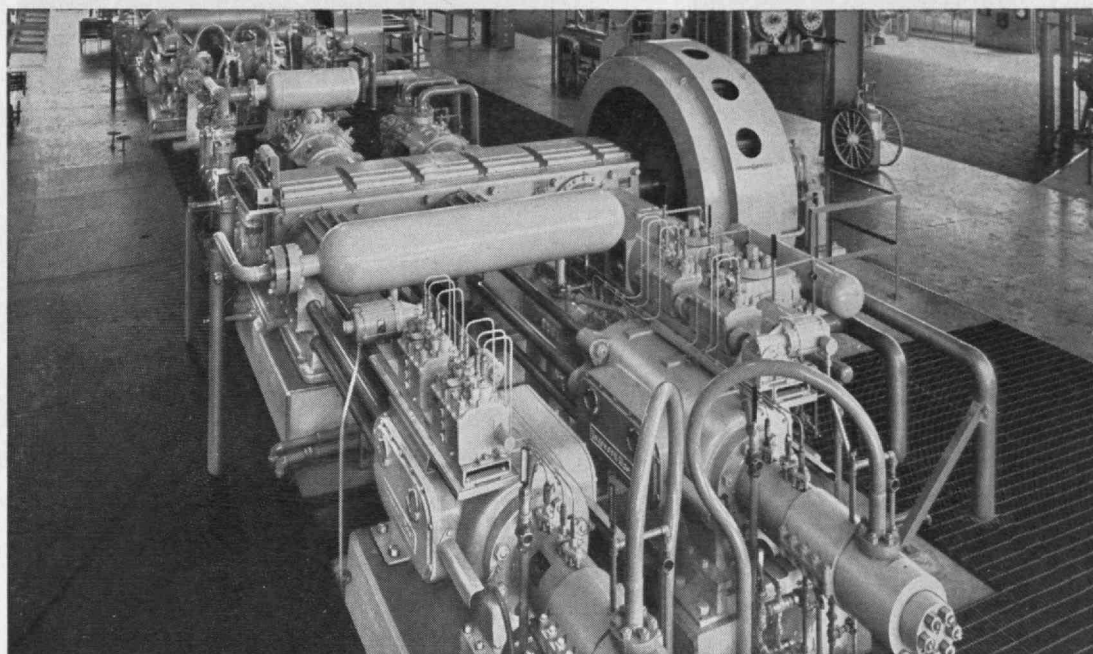
For complete information, phone or write:

**GODFREY L. CABOT, INC. CABOT®**

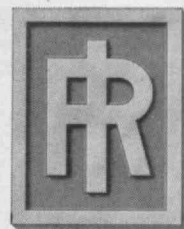
77 FRANKLIN ST., BOSTON 10, MASSACHUSETTS  
Phone: Liberty 2-7300



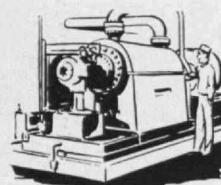
## with **INGERSOLL-RAND**



Seven electric-driven Ingersoll-Rand reciprocating compressors totaling 21,900 horsepower are at work in this large ammonia synthesis plant. The units in the foreground compress mixed gases to more than 12,000 pounds per square inch.



also means  
**LEADERSHIP**  
in



Centrifugal Pumps

### Here's What Compressor Engineering at Ingersoll-Rand can mean to you...

**T**ODAY, air power is one of the industry's most vital requirements. Compressed air and gases are the "breath of life" to chemical and process industries, refineries, power plants, steel mills, manufacturing plants, mines and all types of construction jobs. Hence, compressor and blower engineering offers an exciting and ever-expanding field of challenging opportunities that are virtually industry-wide.

Ingersoll-Rand is the world's largest manufacturer of air and gas compressors and Turbo-Blowers — supplying over 1000 different sizes and types, ranging from 1/2 hp to

17,250 hp, in pressures from vacuum to 35,000 psi.

Ingersoll-Rand also manufactures pumps, rock drills, diesel and gas engines, vacuum equipment, blowers, air and electric tools and specialized industrial machinery as illustrated at the right. These products require engineering know-how in their design, manufacture and field application.

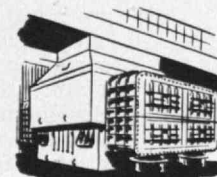
If you are looking for a leadership career with long-range job security and excellent opportunities for advancement, you'll find it at Ingersoll-Rand. For further details, contact your Placement Office, or write to Ingersoll-Rand, 11 Broadway, New York 4.



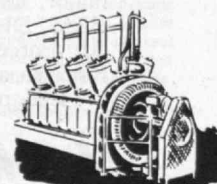
Rock Drills



Air & Electric Tools



Steam Condensers



Diesel & Gas Engines

#### OPPORTUNITIES for ENGINEERS NOW AVAILABLE:

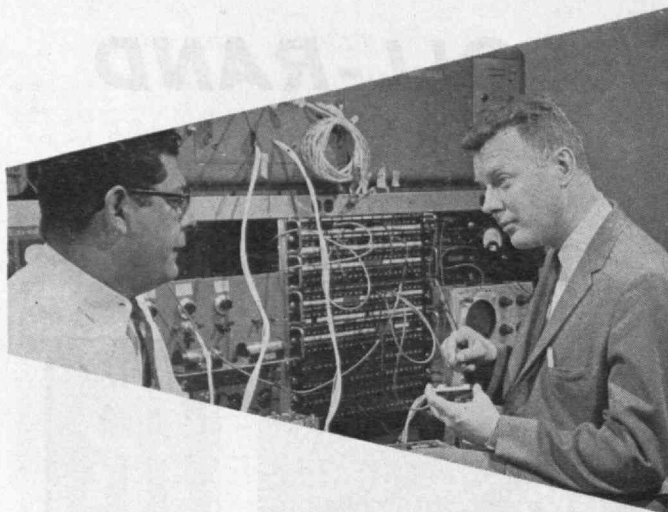
- Sales Engineering
- Production Engineering
- Design Engineering
- Business Engineering
- Research And Development

# Ingersoll-Rand

1-711

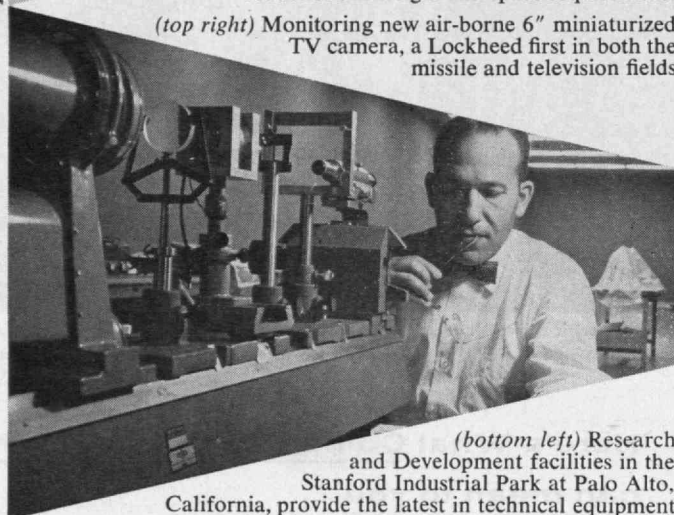
11 Broadway, New York 4, N. Y.

*Among the many graduates of Massachusetts Institute of Technology at Ingersoll-Rand are:  
L. C. Hopton, 1926, First Vice-President and Secretary; P. J. Bentley, 1925, Vice-President.*



(top left) Transistorizing missile flight control systems by Lockheed scientists has meant significant reductions in weight and space requirements

(top right) Monitoring new air-borne 6" miniaturized TV camera, a Lockheed first in both the missile and television fields



(bottom left) Research and Development facilities in the Stanford Industrial Park at Palo Alto, California, provide the latest in technical equipment

(bottom right) Setting up a diffraction image for a research study in infrared optics

## EXPANDING THE FRONTIERS OF SPACE TECHNOLOGY

Lockheed Missiles and Space Division is engaged in all areas of scientific activity — from concept to operation — in missile and space technology.

Important basic research and development work is being conducted in such fields as advanced systems research; nucleonics; physics; chemistry; mathematics; metallurgy; design; test; electronics; aerothermodynamics; gas dynamics; structures; and astrodynamics. Programs under investigation at Lockheed include: man in space; space communications; space physics; re-entry; ionic and nuclear propulsion; cryogenics; magnetohydrodynamics; oceanography; computer development; noise suppression and damage; materials and processes; boundary layer control; electromagnetic wave propagation and radiation; and operations research and analysis.

The Division is systems manager for such major, long-term projects as the Navy Polaris FBM; Discoverer Satellite; Army Kingfisher; Air Force Q-5 and X-7 and other important research and development programs.

Headquarters for the Division are at Sunny-

vale, California, on the San Francisco Peninsula, and research and development facilities are in the Stanford Industrial Park in Palo Alto and at Van Nuys in the San Fernando Valley. Facilities are new and modern and include the latest in technical equipment. A 4,000 acre Division-owned static test base in the Ben Lomond mountains near Santa Cruz provides for all phases of static field test. In addition, flight test facilities are provided at Cape Canaveral, Florida and Vandenberg AFB, Santa Maria, California.

Scientists and engineers of outstanding talent and inquiring mind are invited to join us in the nation's most interesting and challenging basic research and development programs.

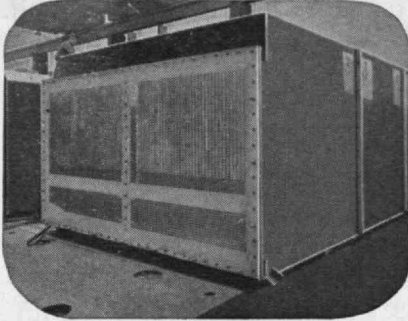
Write: Research and Development Staff, Dept. E-52, 962 W. El Camino Real, Sunnyvale, California. U.S. Citizenship required.

*"The organization that contributed most in the past year to the advancement of the art of missiles and astronautics."* NATIONAL MISSILE INDUSTRY CONFERENCE AWARD

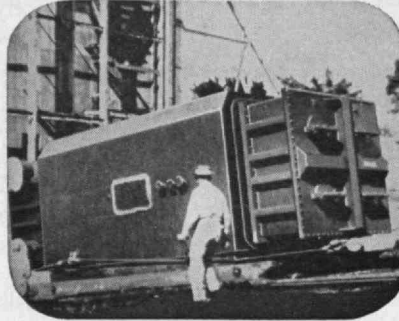
**Lockheed** / **MISSILES AND SPACE DIVISION**  
Weapons Systems Manager for Navy POLARIS FBM; DISCOVERER  
SATELLITE; Army KINGFISHER; Air Force Q-5 and X-7



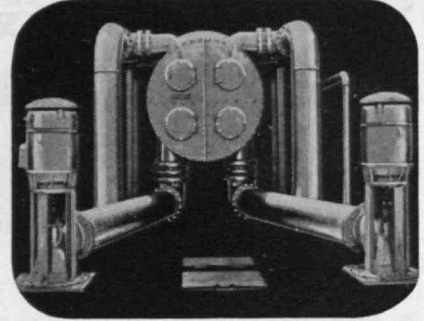
# HOW C.H. WHEELER CONDENSER DESIGN saves space...



Head Room problems are solved by compact condensers like this one. Turbine floor to basement floor, in this case, is only 20 ft. The Unit has 65,000 square feet of condensing surface.

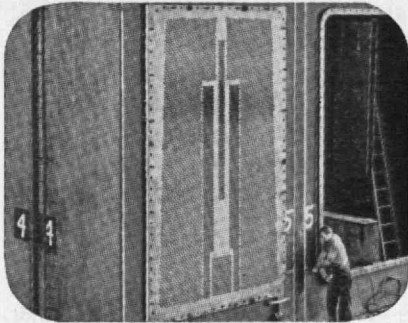


Rectangular Cross Section makes C.H. Wheeler Condensers adaptable to nearly any space or condenser arrangement because the length, width and height of any Wheeler Unit can be varied almost at will.

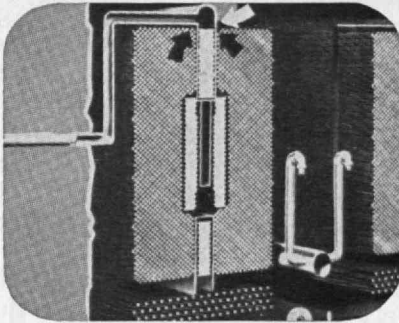


But Wheeler Doesn't limit itself to rectangular design. A round cross section worked out better here, for example, at the first planned gas-steam turbine station ever designed and built in United States.

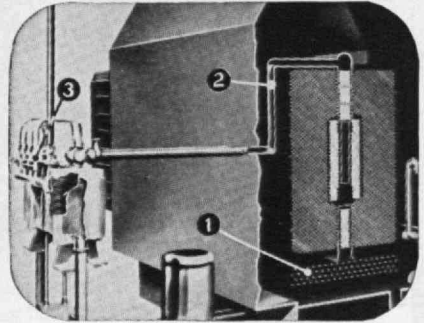
## improves power generating efficiencies...



Triple Lane tube layout, another design feature, provides 3 pathways for steam travel, utilizes maximum cooling surface and produces higher condenser vacuums for power generating stations.

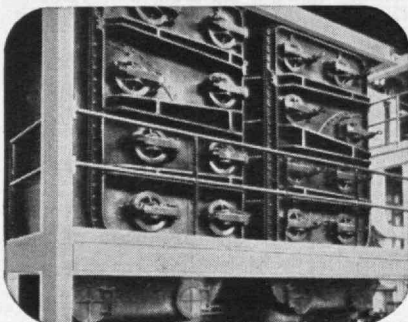


Location of air-vapor takeoff speeds steam travel and allows steam to penetrate to the peripheries of all tubes. It thus improves condenser efficiencies and overall power station operation as well.

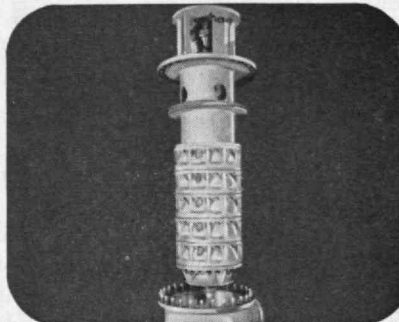


Deaeration of condensate not to exceed 0.01 cc. oxygen/liter is available with special Wheeler designs. Note the Deaerating Bars (1), the Air-Vapor Suction Line (2), and Tubejet® Ejectors (3).

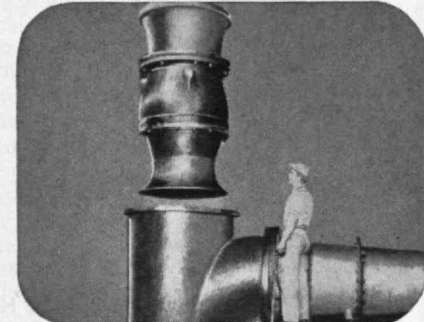
## and reduces maintenance



Patented Reverse Flow permits flushing tubes and sheets without shutting down Unit, during full load with either or both circulating pumps operating. No additional circulating water inlet or discharge piping necessary with C. H. Wheeler's Reverse Flow.



"Pull-Out" Condensate Pumps simplify maintenance because entire pumping element, including all rotating parts, can be removed without disturbing either the pump barrel or the piping connections.



C. H. Wheeler Circulating Pumps, like Condensate Pumps, are easy to inspect and maintain because of "Pull-Out" design. In addition, shafts are heat treated alloy steel and impellers are statically and dynamically balanced for trouble-free operation.

C. H. Wheeler has been designing and building condensers since 1903; has developed such features as Dual Bank Design and Reverse Flow.

# C. H. WHEELER MFG. CO.

19TH & LEHIGH AVENUE

Philadelphia 32, Pennsylvania

Whenever you see the name C. H. Wheeler on a product, you know it's a quality product

Steam Condensers • Steam Jet Vacuum Equipment • Centrifugal, Axial and Mixed Flow Pumps • Marine Auxiliary Machinery • Nuclear Products





## LINCOLN LABORATORY

continues to augment its staff.

We invite inquiries from persons  
with superior qualifications.

A brochure is available which is

generally descriptive of

Lincoln Laboratory programs

in the following areas:

AICBM SYSTEMS STUDIES

NEW RADAR TECHNIQUES

RADIO PHYSICS

SOLID STATE Physics, Chemistry, and Metallurgy

COMMUNICATIONS:

Techniques

Psychology

Theory

INFORMATION PROCESSING,  
DIGITAL COMPUTER TECHNOLOGY

Research and Development

M.I.T. LINCOLN  
LABORATORY

BOX 28

LEXINGTON 73, MASSACHUSETTS



## 25 YEARS AGO

*A column of items of interest culled  
from The Technology Review's files*

■ In May, 1934, The Review reported that "convincing testimony as to the quality of graduate work offered at Technology is found in the recently completed survey of graduate schools conducted by a committee of the American Council on Education. In this survey, the first comprehensive study of American graduate work, Technology was rated as distinguished in 10 of the 11 fields in which it offers work for the doctorate. No other institution had such a high percentage of its work rated as distinguished. The only field, Zoölogy, in which the Institute was not listed as distinguished was judged as satisfactory. . . .

"The study covered 35 fields of knowledge, a list of which was sent to the deans of all graduate schools known to be offering work for the doctorate. . . . The secretary of the national learned society in each field was then asked to submit a list of 100 eminent scholars. To these scientific juries were sent lists of the institutions offering work in their fields and the names of the graduate faculty of each. These scholars, numbering more than 2,000, checked the institutions which in their judgment had adequate staff and equipment to prepare candidates for the doctorate, and starred the departments of highest rank.

"Of the 48 states in the Union, 20 have no institution which in the judgment of the juries is adequately staffed and equipped to offer work for the doctorate in any one of the 35 fields considered. Only five institutions (M.I.T., Princeton, Chicago, Harvard, Cal-Tech) were judged as qualified or distinguished in every field in which they offered doctorates."

■ Additions to the Institute staff, effective the following autumn, were announced as follows:

*Francis Bitter* as Associate Professor in the Department of Mining and Metallurgy; *Joseph H. Keenan*, '22, as Associate Professor in the Department of Mechanical Engineering; *Robley D. Evans* as Assistant Professor in the Department of Physics; and *Edwin R. Gilliland*, '33, as instructor in the Department of Chemical Engineering.

■ Aeronautical honors came to two Alumni: to *Frank W. Caldwell*, '12, the annual Collier Trophy of the National Aeronautic Association; to *Captain Albert F. Hegenberger*, '17, the Distinguished Flying Cross.

Mr. Caldwell's award was for his invention of the controllable pitch propeller which "has revealed a new horizon in aeronautics and taken the limits off speed. Henceforth, our pace through the air will be as fast as the daring and imagination of engineers."

Captain Hegenberger's decoration was cited as being "for extraordinary achievement while participating in aerial flights. By his initiative, energy, and courage, [he] rendered exceptionally valuable services to the Government of the United States in the execution of a series of aerial flights culminating with a solo instrument flight and landing in May, 1932, in connection with the testing and development of the Air Corps system of Instrument Flying and Landing."

# PICK ONE WITH EXTENSIVE PROCESS INDUSTRY EXPERIENCE

Choose a firm with a staff and facilities geared to the design, engineering and construction of chemical and petrochemical plants—and with a *proven* record in this area of industry.

The Lummus Company, for example, has built over 800 chemical process units in the last 50 years. Among them have been the world's largest butadiene plant, the world's first commercial plant to make high-pressure acetylene chemicals, and one of the least expensive anhydrous ammonia plants ever built.

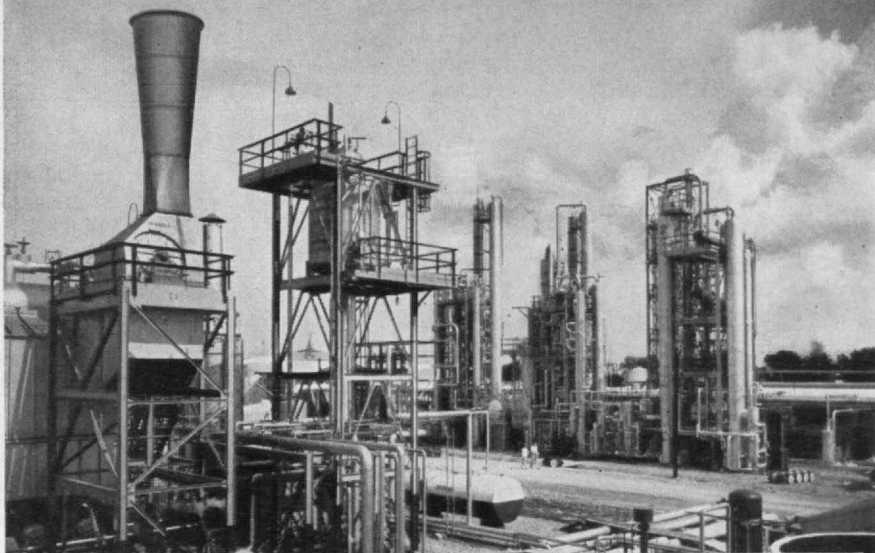
Lummus maintains a staff of highly trained specialists in seven branch offices and subsidiaries throughout the world. They are thoroughly experienced in chemical plant design and construction.

Then, too, Lummus has an Engineering Development Center to bridge the gap between laboratory research and commercial plant operation. The Center has extensive chemical pilot plant facilities in operation, and is equipped for designing and building new pilot units.

Call in Lummus when you begin plans on your next chemical plant.

Visit the Lummus Exhibit,  
Fifth World Petroleum Congress Exposition,  
New York Coliseum, June 1-5, 1959

## CHEMICAL PLANTS— A SPECIALTY OF LUMMUS



**ABOVE**—World's first full-scale, high-pressure acetylene chemicals plant at Calvert City—engineered and constructed by Lummus for General Aniline & Film Corporation.

**BELOW**—Just a few examples from Lummus' long list of outstanding chemical projects.

PRODUCT	COMPANY	LOCATION
Vinyl Acetate	Air Reduction Chemical Co.	Calvert City, Kentucky
Phenol-Acetone	Progil-Electrochimie	Pont de Claix, France
Anhydrous Ammonia	Food Machinery & Chemical Corp. (Westvaco Chlor-Alkali Division)	South Charleston, West Virginia
Phthalic Anhydride	Pittsburgh Coke & Chemical Co.	Neville Island, Pa.
Epon Resins	Shell Chemical Corp.	Houston, Texas
Bisphenol	Shell Chemical Corp.	Houston, Texas
Tetramer, Cumene, Phenol-Acetone	Societe des Chimiques des Derives du Petrole	Antwerp, Belgium
Sulfuric Acid	Inland Chemicals Canada Ltd.	Fort Saskatchewan, Alberta, Canada
Ethylene Oxide-Glycol	Calcasieu Chemical Corp.	Lake Charles, La.
Ethylene	Petroleum Chemicals, Inc.	Lake Charles, La.
Beryllium Metal	The Beryllium Corp.	Ashmore, Pa.



THE LUMMUS COMPANY, 385 MADISON AVENUE, NEW YORK 17, N.Y.

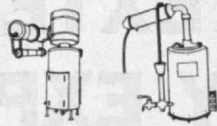
WASHINGTON, D.C. • HOUSTON • MONTREAL • MARACAIBO • LONDON • PARIS • THE HAGUE

# Barnstead

pure  
water  
specialists  
since  
1878...

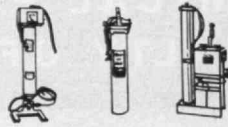
## STILLS

In capacities of from 1/2 to 1000 g.p.h., for laboratory, commercial and industrial use.



## DEMINERALIZERS

Mixed-Bed, One-Bed, Two-Bed, and Four-Bed models. Capacities up to 2500 g.p.h.



## TRANSISTOR WASHERS



For washing and rinsing transistors, diodes, rectifiers, tube parts, and materials such as Silicon and Germanium.

## ULTRA PURE WATER

BARNSTEAD® "MF"® Sub-micron Filter for electronic and nuclear fields. Filters out particles to .000016 inches. Produces 18,000,000 ohm water.



# Barnstead

STILL & STERILIZER CO.

A. White, '26 T. Hartwell, '28

N. A. Everett, '48 V. C. Smith, '48 S. Beran, '58  
2 Lanesville Terrace, Boston 31, Mass.



## FREE BOOKLET TELLS WHAT CO<sub>2</sub> CAN DO FOR YOU

agriculture  
chemistry  
metals  
electronics  
refrigeration  
food  
drugs  
textiles  
rubber

There's practically no end to the important jobs that CO<sub>2</sub>—combined with Liquid Carbonic savvy—is doing. Chances are this combination can come up with some surprising answers for you, too. For scores of CO<sub>2</sub> applications, covering all industry, send for LIQUID's new free booklet, "Applications Unlimited." Just use the coupon below.

## MAIL THIS COUPON

# LIQUID CARBONIC

DIVISION OF GENERAL DYNAMICS CORPORATION

135 South LaSalle St. • Chicago 3, Illinois

Send me my free copy of "Applications Unlimited."

Name \_\_\_\_\_

Company \_\_\_\_\_

Position \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

## MAIL RETURNS

### A Spelling Problem

FROM EDWARD ZETTERBERG, '25:

Would the famous Russian chemist who developed the Periodic Classification of the Elements recognize his name if he were alive today? Textbooks used have these versions.

Mendelejeff, *Vitalized Chemistry* by Jardine  
Mendelejeff, *New World of Chemistry* by Jaffey  
Mendelejev, *Biography of Mendelejev* by Posin  
Mendeleeff, *General College Chemistry*, by Richardson and Scarlett

Recently 20 pupils in a chemistry class were asked to spell this man's name. The spelling was different in every case:

Mendoloeff Mandeleff Mendeleof Mendelieth Mendolaieff  
Mendelleuf Mendelauf Mendeleiff Mendalith Mendaleff  
Mendaleuf Mendalaen Mendelief Mendeljeff Mendeloyeph  
Mendalaiph Mendalif Mendolieff Mendleth Mendolief

Is confidence in the accuracy of science affected by authors using different spelling for the name of a great chemist?

Maybe we ought to forget about the spelling and just call him the Great Periodic Man.

Muncie, Indiana

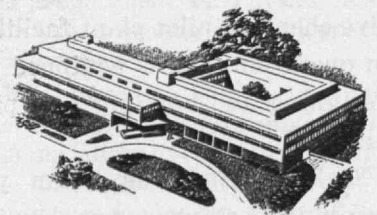
### Fission and Combustion Nomenclature

FROM FRANK S. MACGREGOR, '07:

In your November issue . . . I have been bothered by two expressions, namely, "propulsive reactor" and "power reactors" . . . I have never heard a fire box or boiler described by the purpose for which the heat is to be used. . . . Would be pleased to learn if the new nomenclature is to be considered correct.

Wilmington 5, Del.

[Asked about this, Professor Manson Benedict, '32 of the M.I.T. Department of Nuclear Engineering, said: "It has become customary to characterize reactors by the purpose served by the plant of which they are a part. I agree with Mr. MacGregor that this seems inconsistent with usage in plants employing combustion as a heat source."]



Chas. Pfizer & Co., Inc.,  
Research Laboratories  
Shreve, Lamb & Harmon  
Associates, Architects

## Let's make it easy for you

Modern building projects are becoming increasingly complex.

The job of the builder is to make each project as simple and easy as possible for the owner. Forty-two years of experience has shown us how to do this.

Companies for whom we have built come to us again and again. 70% of our work is repeat contracts.

## W. J. BARNEY CORPORATION

Founded 1917

INDUSTRIAL CONSTRUCTION

101 Park Avenue, New York

Alfred T. Glassett, '20, President





... a hand in things to come

## Reaching for the moon

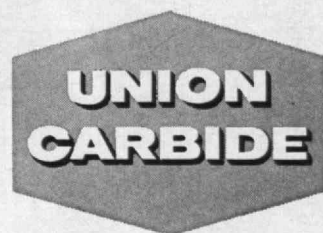
*Only a dream yesterday... reality today*

Who dares call anything impossible today? Not when scientists have created rockets and missiles that bring the moon within our reach.

Union Carbide research in fascinating new materials has helped take the attack on space out of the realm of science fiction. Such research has developed super-alloys to withstand the forces of launching and flight ... liquid oxygen to fire the mighty thrust into space ... and components for solid fuels that burn in an airless universe. And research is now leading the way to new plastics for nose cones and new batteries and other energizers for instrumentation.

With the same compelling search for knowledge that has brought us so close to space travel, the scientists of Union Carbide are constantly developing new substances that make possible a host of useful things for our everyday life. Today's work-saving detergents, miracle fibers, and quick-drying paints and lacquers are only the beginning of an endless stream of products that will enrich the world tomorrow.

*Learn about the exciting work going on now in carbons, chemicals, gases, metals, plastics, and nuclear energy. Write for "Products and Processes" Booklet C, Union Carbide Corporation, 30 East 42nd St., New York 17, N.Y. In Canada, Union Carbide Canada Limited, Toronto.*



... a hand  
in things to come



## Assures Luxury Driving for CITIES SERVICE Customers

A new platinum catalyst reformer at its East Chicago, Ind. refinery now enables Cities Service to supply Midwest customers with a new gasoline for true luxury driving. Feeding on low octane gasoline distilled from crude oil, the reformer substantially increases the octane of the gasoline prior to blending with other refinery streams.

A key unit in the reformer is the large, modern debutanizer tower which Graver fabricated on order from Procon Incorporated, the prime contractor. Produced to API-ASME codes and spot X-rayed, the tower is 101' tall, weighs 138,200 lbs. and is designed to operate at 350°F under 175 psig.

If there is a tower in your future plans, talk it over with Graver. Over 100 years of experience assure the skills and quality you seek.

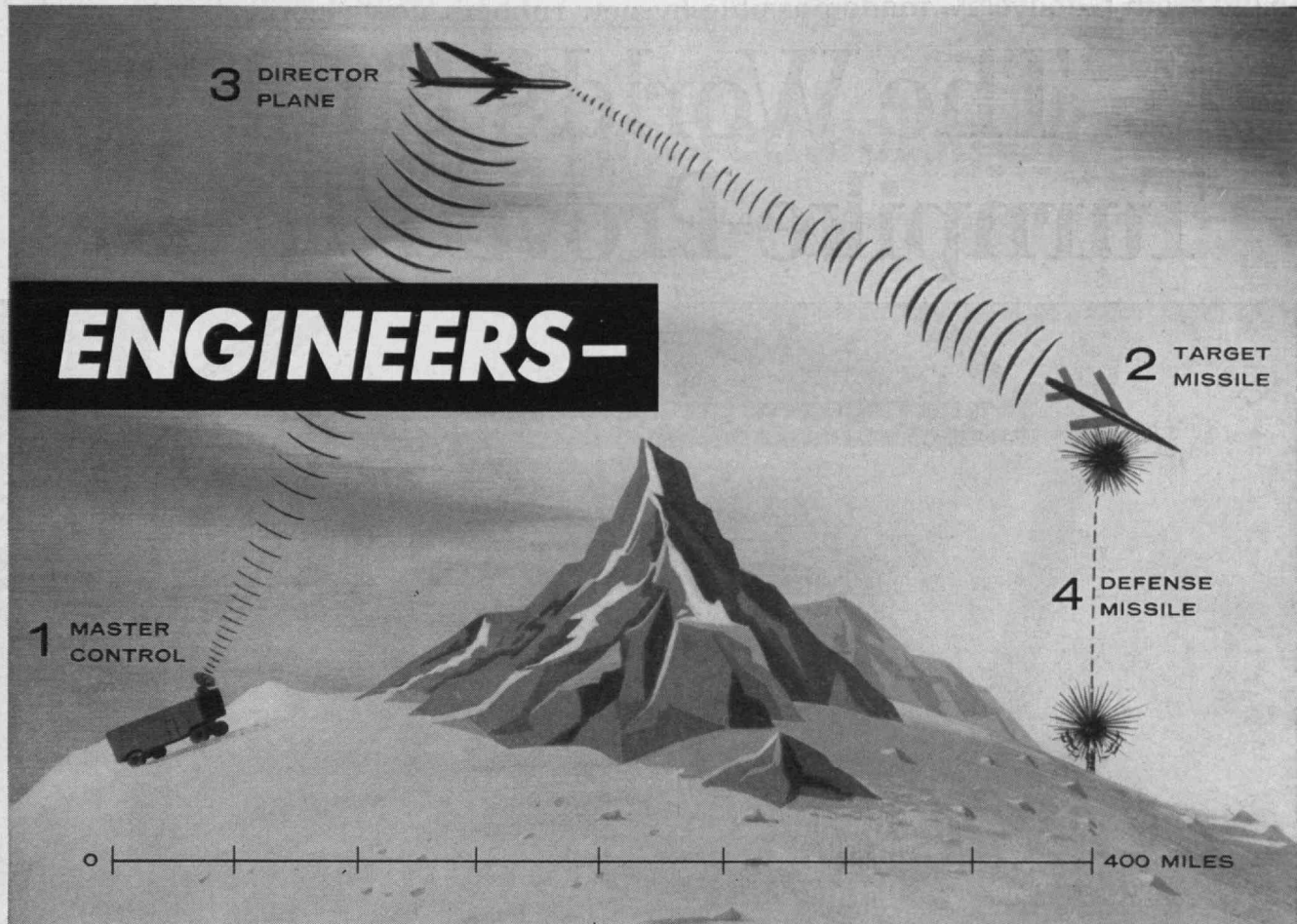
**GRAVER TANK & MFG. CO.**

DIVISION—UNION TANK CAR COMPANY  
EAST CHICAGO, IND.

**GRAVER**®

*Plants  
and Offices  
Across America*





**You will work at Sperry  
on challenging assignments  
like this...**

**In action** Sperry system, housed in air-transportable trailer (1), can command, track and telemeter drone flight data of supersonic target (2) either directly or through air director (3) when either long range or low altitude is involved. Object is to test readiness of anti-missile defense and accuracy of ground-to-air defense missile (4)

## **DRY RUN FOR USAF ANTI-MISSILE DEFENSE**

New Sperry radar guidance system controls drones at 400-mile range

A microwave command guidance system designed to help test U.S. defenses against potential enemy weapons has been successfully demonstrated to the Air Force. Developed by Sperry under contract with the Air Research and Development Command, the system is scheduled for initial use with Q-4A supersonic drones.

Just one of many projects of vital importance that Sperry engineers work on. Advanced electronic and gyroscopic systems connected with Polaris Missile, integrated countermeasures systems, Terrier, Tartar, Talos radar guidance systems, Tactical early warning radar systems, Ship gyro stabilizers... the list of Sperry projects is almost endless.

No wonder Sperry is thought of as an "engineer's firm." It offers the kind of diversified, important assignments that attract and hold career engineers. Proof of this is found in the fact that over 2,600 Sperry Employees are 15-year men.

Sperry's present production... and future potential... are at all-time highs. If you're interested in, not just an engineering job, but an engineering career—check Sperry.

As for home life... when working for Sperry you can settle serenely in Suburbia, yet be only minutes from New York City, the cultural and recreational center of the world.

### **Openings in Many Specializations**

**Including:**

Infrared Receivers • Radar Receivers • Infrared Systems  
Radar Transmitters • Pulse Circuits • Servo Systems  
Digital Computers • Microwave Tubes • Microwave Instrumentation  
Broad Band Antennas • Transistor Circuits For Pulse & Video Applications  
Microwave Antenna Design

### **Confidential Interviews**

Contact Mr. J. W. Dwyer, Employment Manager  
Saturday AM Interviews Arranged by appointment

# **SPERRY**

## **GYROSCOPE COMPANY**

Division of Sperry Rand Corp.

Great Neck, Long Island, N. Y., Fieldstone 7-3665



New from Goodyear...made possible by new rubbers, new chemicals, new cords:

# The World's First Turnpike-Proved Tires!



Florida's 15-mile "Sunshine Skyway" over Lower Tampa Bay.

Your present tires may "get you by" around town, but not on the tire-eating turnpikes. New Turnpike-Proved Tires by Goodyear give you up to 25% more safe mileage—no matter where or how you drive!

**B**EFORE we could build these new tires, Goodyear scientists had to solve two vital problems:

**Problem #1—tread rubber:** At high speeds, ordinary tread rubber is literally eaten away.

But by *intimate mixing* of new chemicals and rubber molecules, Goodyear scientists created today's longest-wearing tread rubber for today's toughest driving conditions.

**Problem #2—tire cord:** High-speed

heat also weakens ordinary cord.

The answer? Goodyear's new 3-T cord (Nylon or Tyrex), that's *triple-tempered*, under precisely controlled Tension, Temperature and Time, for extra toughness.

**Proof:** On Goodyear's five-mile, 140-mph test track at San Angelo, Texas, these tires *proved* they'll give more safe mileage anywhere.

See them at your Goodyear dealer's. Goodyear, Akron 16, Ohio.



This year the average motorist will do more than half his driving on modern expressways and turnpikes—at high legal speeds. For greater safety, you need Turnpike-Proved Tires by Goodyear.

# GOOD YEAR

MORE PEOPLE RIDE ON GOODYEAR TIRES THAN ON ANY OTHER KIND!

Watch "Goodyear Theater" on TV every other Monday evening.



# The Technology Review

REG. U.S. PAT. OFF.

EDITED AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

CONTENTS FOR MAY, 1959 VOL. 61, NO. 7

## INTERPLANETARY FLIGHT PROBLEM Front Cover

*A table explained in the article on page 349 of this issue*

25 YEARS AGO THIS MONTH 334

MAIL RETURNS 336

ADVANCING THE EARTH SCIENCES 342

*A gift from Mr. and Mrs. Cecil H. Green will provide a home for a new center*

THE TREND OF AFFAIRS 343

INTERPLANETARY FLIGHT PROPULSION 349

*A Technology Review Report of a Minta Martin Lecture delivered by Professor George P. Sutton*

## TODAY'S TECHNOLOGY MATRONS

By Eloise M. Smith 352

## THE NEW HIGH SCHOOL PHYSICS COURSE

By Elbert P. Little 353

*The Physical Science Study Committee's project director reports on its progress*

IF YOU'RE GOING TO RUSSIA By Secor D. Browne 357

*A guidebook by an Assistant Professor of Russian who has been there*

CONTRASTS IN RUSSIA By Elliott B. Roberts 359

## THE REMARKABLE "MASER" STORY

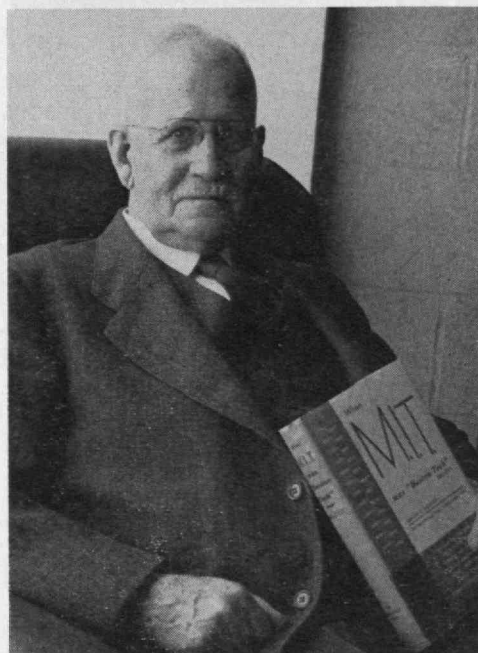
By Benjamin Lax and Harry C. Gatos 360

TALK OF OUR TIMES 362

EDITOR: Volta Torrey; BUSINESS MANAGER: R. T. Jope; CIRCULATION MANAGER: D. P. Severance; EDITORIAL ASSOCIATES: Paul Cohen, F. W. Nordsiek, J. J. Rowlands; EDITORIAL STAFF: Ruth King, Winifred R. Sibley; BUSINESS STAFF: Madeline R. McCormick; PUBLISHER: H. E. Lobdell.

On April 5, Samuel C. Prescott, '94, observed his 87th birthday. Professor of Industrial Biology, Emeritus, and author of *When M.I.T. Was Boston Tech*, he can be found regularly in his office in the Samuel Cate Prescott Laboratories.

M.I.T. Photo



Published monthly from November to July inclusive on the twenty-seventh of the month preceding the date of issue, at 60 cents a copy. Annual subscription, \$4.00; Canadian and foreign subscription, \$4.50. Published for the Alumni Association of the M.I.T.; John J. Wilson, President; H. E. Lobdell, Executive Vice-President; D. Reid Weedon, Jr., William W. Garth, Jr., Vice-presidents; Donald P. Severance, Secretary-Treasurer. Published at Hildreth Press, Inc., Bristol, Conn. Editorial Office, Room 1-281, Massachusetts Institute of Technology, Cambridge 39, Mass. Entered as second-class mail matter at the Post Office at Bristol, Conn. Accepted for mailing at special postage rates provided for in Section 538, P. L. & R. Act of February 28, 1925. Copyrighted, 1959, by the Alumni Association of the Massachusetts Institute of Technology. Three weeks must be allowed to effect change of address, for which both old and new addresses should be given.





### ***Geophysical Pioneers Stimulate Research in Earth Sciences***

Cecil H. Green, '23, and Mrs. Green of Dallas, Texas, have given 30,000 shares of the stock of Texas Instruments Incorporated, having a market value on April 1 of \$2,527,500, to M.I.T. to provide for the construction of a building to house the Center for Earth Sciences. Mr. and Mrs. Green are pictured above in the Dallas plant of Texas Instruments, a leading manufacturer of transistors and electronic systems for defense. Mr. Green is a vice-president and member of the board of directors of this company.

Mr. Green's interest in the Institute has been intense and enduring since he enrolled as a student from a foreign country in 1921. Born in Manchester, England, and brought up in Vancouver, British Columbia, he came to M.I.T. after studying at the University of British Columbia. He received both the bachelor's and

master's degrees from M.I.T., has served on the National Nominating Committee of the M.I.T. Alumni Association, and in June, 1958, was elected a special term member of the M.I.T. Corporation.

While employed by the General Electric Company in Schenectady, N.Y., Mr. Green met and married Miss Ida Flansburgh, who has shared with him both the life of a pioneer in geophysical exploration and his deep interest in the advancement of science and education. After working as a research engineer with other companies, Mr. Green joined the newly formed Geophysical Service Incorporated in 1930 and worked in many areas with seismograph crews. He became president of the company in 1950 and chairman of its board of directors in 1955. This company is now a wholly owned subsidiary of Texas Instruments Incorporated.



## The Trend of Affairs

### New Facilities to be Focused on the Sciences of the Earth

■ M.I.T. established an interdepartmental Laboratory of Earth Sciences two years ago to foster closer integration of research in geology, geochemistry, geophysics, meteorology, and oceanography. A multi-story building is being planned now to house this new Center's research tools, library, seminars, and offices. Such an addition to the Campus has been made possible by the gift of \$2,527,500 announced last month. It was the largest gift that the Institute has received in many months, and came from Cecil H. Green, '23, and Mrs. Green of Dallas, Texas.

"Within the all-encompassing field of science itself, the importance of the earth sciences has been increasing with almost explosive force," Mr. Green observed. "For our country to maintain leadership in these areas in competition with other nations, or even to keep abreast in the race for new knowledge, we believe it imperative that greater effort be devoted within these fields, and to center that effort where it can bear fruit most quickly.

"We consider M.I.T. to be in an especially favorable position to make effective contributions to our basic knowledge in these disciplines and to do so with maximum dispatch. The earth sciences, as well as a broad range of other and supporting sciences, already are a part of M.I.T.'s curriculum and the Institute possesses both the scholarship and the leadership essential for this job. Hence it can go to work at once, and with promise of truly rewarding results."

Mr. Green also expressed enthusiasm for programs of research and graduate study in the earth sciences elsewhere. He particularly pointed out the projects being undertaken at the new Graduate Research Center at Southern Methodist University in Dallas. He is a member of this Center's board of trustees, as well as a special term member of the M.I.T. Corporation.

Mr. Green expects the S.M.U. Center to fulfill a great need for advanced studies in earth sciences in the Southwest, the nation's principal petroleum producing area, and he predicted that its eventual impact would be comparable to that of M.I.T. programs in the earth sciences and other broad fields of graduate

study and scientific research. Mr. Green emphasized, however, that the S.M.U. Center's projects are in the formative stage, whereas M.I.T. has such programs well under way. The latter need only increased emphasis and support to become almost immediately productive of important new knowledge vital to the security of our country.

M.I.T. has been one of America's leading educational institutions in the earth sciences for nearly a century. Its first president, William Barton Rogers, was the country's outstanding geologist in his day. The nation's first Course in Meteorology was given at M.I.T. in 1928. For many years the Institute has co-operated with the Woods Hole Oceanographic Institution, sharing staff members, students, and technological problems, and even closer ties are now envisioned. The Institute also has introduced new educational methods in geology and geophysics, such as summer and co-operative training programs in the field and with industrial concerns.

The Institute's facilities applicable to the earth sciences now include a variety of large computers, a nuclear reactor, outstanding laboratories of hydrodynamics, acoustics, and electronics, the Lindgren library, and the Schwarz Map Room. Many of these facilities especially helpful to observational, experimental and theoretical scientists interested in the earth, sea, and atmosphere will be brought together in the new building which has been made possible by the gift from Mr. and Mrs. Green.

"Modern science, with interest centered on the atom and space, has neglected the geo-sciences, meteorology and oceanography," President Julius A. Stratton, '23, observed in his acknowledgment of the grant. "What is underneath the surface of the earth, what goes on in the oceans, how mountains are formed, and how the atmosphere works are some of the questions earth scientists hope to answer in the future. It is clear that tomorrow's geologists, together with meteorologists and oceanographers must work in close co-operation.

"The practical value of such studies will aid in every segment of the nation's welfare and defense. To assure adequate supplies of fresh water needed by expanding cities, we must understand the cycle of water in nature. Extended prediction and the possibility of



large-scale weather control are no longer idle speculation. Exploitation of our mineral resources depends on new techniques of mineral exploration and better understanding of how mineral deposits are formed.

"Today the earth sciences stand on the threshold of great advances, as did electronics 10 years ago. Results from the International Geophysical Year have made it clear that much is to be done in understanding the mysteries of the universe. It is also clear that the Soviet Union has made notable advances in areas such as prospecting by geo-chemistry and weather control.

"This magnificent grant of Mr. and Mrs. Green will permit a major effort to be made for a better understanding of our physical environment. All the recent advances in electronics, physics, chemistry, and mathematics will be brought to bear on these problems. Geologists, chemists, physicists, meteorologists, and oceanographers now will be able to work side by side in a basic and applied scientific program which will have, I am certain, the greatest impact on our economy and society as a whole."

### Reporters without a Deadline

■ Fifty newspaper reporters, columnists, and editorial writers crammed for 12 hours at M.I.T., for 12 more at Harvard, then met again on an April Saturday to hear six more lectures. This was not an off-the-record meeting. Nevertheless, not a line of what was said appeared in the fat Sunday newspapers because this was a new kind of press conference. It was a seminar, arranged by the Nieman Foundation with the help of the Harvard News Office and M.I.T. Public Relations Office, to increase the journalists' understanding of scientific concepts and technological developments that now underlie much of the news. It was intended not to produce headlines but to increase the accuracy of reporting in the future.

President Stratton of M.I.T. opened this three-day Seminar for Science Writers with a discussion of major educational and scientific problems, and Professor Jerome B. Wiesner spoke candidly about the relations between government and science. Professor Norbert Wiener pointed out mathematical similarities in the Charles River's waves, brain waves, electrical distribution systems, and the orbits of asteroids. Professors Cyrus Levinthal, Alexander Rich, and Salvador E. Luria plunged into details of molecular biology, viruses, and cancer. Professor Hurd C. Willett emphasized the mysteries of meteorology. Professor Robley D. Evans and Robert A. Dudley covered biological effects of radiation. Professor Sanborn C. Brown, '44, compared Russian and American thermonuclear experiments, Herbert Weiss of Lincoln Laboratory went into the mathematics of interplanetary communication, and Professor Martin Deutsch, '37, explained the fascination of pure physics.

An equal number of distinguished members of the Harvard faculty dealt with an equally wide range of topics, including recent discoveries of the vertebrate paleontologists, current conceptions of the earth's interior, and the cosmologists' newest "hot universe" theory. Wallace R. Brode, Science Adviser to the Department of State, also spoke on "Science Reporting Problems."



The Hartford Times' man, Whitney Jacobs (left), and Brenton Welling of Business Week had coffee with President Stratton.

Organizations represented included The Associated Press, Berkshire Eagle, Boston Advertiser, Boston Globe, Boston Herald, Boston Traveler, Buffalo News, Business Week, Chicago Sun-Times, Christian Science Monitor, Columbia University, Denver Post, Detroit Free Press, Hartford Times, Louisville Times, National Science Foundation, Newburyport Daily News, New York Herald Tribune, New York Times, Newark News, Palo Alto Times, Philadelphia Bulletin, Providence Journal, Quincy Patriot Ledger, Rochester Times Union, Science Service, Scripps-Howard Newspapers, Syracuse Herald-Journal, Time, Toledo Blade, United Press International, U.S. News and World Report, Washington Post, Washington Star, Waterbury Republican, Watertown Daily Times, and Worcester Gazette.

### Fellowships at Woods Hole

■ Five of 11 Summer Student Fellowships awarded this spring by the Woods Hole Oceanographic Institution went to M.I.T. men. This Fellowship program, which is now in its 29th year, gives students an opportunity to pursue advanced studies in oceanography under the supervision of the Institution's staff. No degrees, credits, examinations, or grades are given, although a certificate of accomplishment may be issued.

"We consider the Fellowship program one of our most important activities and are proud that many men and women now engaged in scientific research once were our Fellows," said Paul M. Fye, the Woods Hole Institution's Director. "Oceanography is expanding rapidly. We need the brains and drive of present-day students to aid in our aims to describe, understand, and eventually predict natural occurrences so that man may learn to make full use of his environment rather than be ruled by it."

The Woods Hole Educational Policy Committee received 98 applications for Fellowships this year from students of biology, chemistry, physics, mathematics, hydrodynamics, meteorology, and geology in 22 schools in the United States, India, Japan, and Sweden.

The five M.I.T. men who are recipients of the Fellowships are John C. Gille, Edward J. Green, Robert A. Phinney, Lynn R. Sykes, and Thomas F. Webster.

## Alumni Support Housing Program

■ President Stratton announced in April that M.I.T. plans to begin construction this summer of dining room facilities for the Burton House dormitory. This decision was made possible by a pledge that a substantial part of this year's 1959 Alumni Fund will be devoted to furthering development of the long-range residential plans of the Institute.

From its founding in 1941, the Fund has had a special interest in the welfare of students. It has supported scholarships and made large contributions to several of the Institute's major building projects, including the Baker House dormitory.

As stated jointly by John J. Wilson, '29, President of the Alumni Association, and Edwin D. Ryer, '20, Chairman of the Alumni Fund Board: "The Executive Committee of the Alumni Association and the Alumni Fund Board have pledged a substantial portion of the uncommitted funds of this year's Alumni Fund to the betterment of residential life at the Institute. It is also the unanimous sentiment of the two groups that the continued improvement of student housing should be a major responsibility of the Alumni."

"Speaking both as President of the Institute and as an Alumnus," President Stratton said, "I can think of no more appropriate uses of the Alumni Fund than the support of undergraduate scholarships and the improvement of student residential and campus facilities. This generous pledge of the Fund Board will permit us to plan immediately to implement some of the recommendations of the Committee on Student Housing."

This committee was a group of Corporation members, Faculty, Alumni, and students who spent a year studying the Institute's long-range residential needs.

## New Knowledge of Hearing Sought

■ A unique laboratory in which doctors, neurophysiologists, and electrical engineers will work together has been established by the Massachusetts Eye and Ear Infirmary and M.I.T. This program of research, treatment, and education, it is hoped, will contribute to understanding the basic phenomena of hearing and help solve some problems of deafness.

The new laboratory was built and equipped at a cost of \$200,000 and will be operated under grants from the National Institutes of Health. Located at the Infirmary in Boston, it is known as the Eaton-Peabody Laboratory of Auditory Physiology.

Work in the laboratory is directed by Dr. LeRoy A. Schall, Chief of Otolaryngology for the Infirmary and Lecompte Professor of Otology at the Harvard Medical School, and Walter A. Rosenblith, Professor of Communications Biophysics at M.I.T. The research is under the supervision of Dr. John W. Irwin, Director of the Microcirculatory Laboratory at the Infirmary, and of Dr. Nelson Yuan Sheng Kiang, neurophysiologist in M.I.T.'s Research Laboratory of Electronics.

There are two principal forms of deafness, according to Dr. Schall. One, conductive deafness, is that in which mechanical obstructions in the middle ear interfere with hearing. Surgeons have developed successful techniques for dealing with this form.



Former students of Arthur C. Cope, Professor of Organic Chemistry at M.I.T., gave him two bound volumes of reprints of his articles, at a luncheon in the Statler Hilton Hotel in Boston during the 135th annual meeting of the American Chemical Society. At left is Elmer R. Trumbull, Jr., a post-doctoral fellow in the Department of Chemistry at the Institute in 1947-1948.

The other principal kind of deafness is thought to involve faults in the initiation of the nerve impulses on their way to the brain. This is the defect that occurs often as the result of long exposure to loud noises and not infrequently as a complication of conductive deafness. It also is associated with the process of aging. To the extent that scientists do not fully understand the detailed ways in which these received changes take place in the inner ear, doctors can do little to correct defects in this area.

Using the techniques of electrical engineering as well as those of neurophysiology and psychophysics, Professor Rosenblith has conducted extensive studies in the Research Laboratory of Electronics at M.I.T. in an attempt to learn more about the part played by the nervous system in hearing.

Typically, auditory stimuli such as clicks are fed into the ears of subjects, either humans or animals. Electrical activity (such as brain waves) from the subjects is then analyzed by means of a computer to determine the extent to which the stimuli were actually recorded by the brain. Since such research deals often with tiny electrical currents that have to be detected in the presence of much other electrical activity, these experiments require great delicacy and precision.

To eliminate sounds and electrical signals not under study, the new laboratory at the Infirmary was constructed in a way that isolates it from much of the outside world. It is built on 40 piles driven into the blue clay below the filled land of Back Bay so that vibration of traffic will not reach it, and one room is lined with copper screen, to shut out radio waves and other electrical interference.



## On the Horizon

June 15, 1959 —

*Morning:* Inauguration of Julius Adams Stratton, '23, as the 11th President of the Institute.

*Afternoon and Evening:* 25th Alumni Day and the 84th Annual Alumni Banquet, with the Boston Pops Orchestra again on the M.I.T. Campus.

## Individuals Noteworthy

■ Named in the news recently were the 23 Alumni whose elections, promotions, and appointments are recorded below:

*Ralph A. Fletcher*, '16, as a Director, Union National Bank, Lowell, Mass. . . . *Irwin L. Moore*, '20, and *William Webster*, '23, respectively, as Chairman of the Board and as President, New England Electric System;

*Paul J. Cardinal*, '24, as a Director, New York Board of Trade, Inc. . . . *Ello E. Richardson*, '25, as Vice-president and General Manager, Cambridge Gas Company . . . *Robert W. Conly*, '26, as Senior Vice-president and Comptroller, Aetna Life Insurance Company, Aetna Casualty and Surety Company, and Standard Fire Insurance Company;

*J. Robert Bonnar*, '27, as Director of Marketing, Dyestuffs and Chemical Division, General Aniline and Film Corporation . . . *George I. Chatfield*, '28, as Senior Vice-president, Director, and member of the Plans Board, Benton and Bowles, Inc., New York City . . . *Charles T. Abbott*, '30, as a Director, New England Gas and Electric Association Service Corporation;

*Joseph R. Stevens*, '30, as President, J. T. Baker Chemical Company, Phillipsburg, N.J. . . . *Bennett Archambault*, '32, as Chairman, Stewart-Warner Corporation . . . *James J. Robson*, '32, as President, Tire and Rim Association, Inc.;

*Colonel Arthur L. MacKusick*, '32, as Commanding Officer, White Sands Missile Range, New Mexico . . . *George W. Ewald*, '37, as Manager, Synthetic Industrial Fabric Department, J. P. Stevens and Company, Inc. . . . *Karl P. Goodwin*, '37, as a Director, Massachusetts Blue Cross;

*Charles E. Reed*, '37, as General Manager, Metallurgical Products Department, General Electric Company, Detroit . . . *Edward A. Beaupre*, '41, as Assistant to the Vice-president—Operations, Sanders Associates, Inc., Nashua, N.H. . . . *J. Lester Klein*, '41, as Vice-president, Nuclear Metals, Inc., Concord, Mass.;

*Thayer Rudd*, '41, as Plant Manager, Allegheny Electronic Chemicals Company, Bradford, Pa. . . . *Edward O. Vetter*, '42, as Executive Vice-president, Metals and Controls Corporation, Attleboro, Mass. . . . *Robert D. Peck*, '44, as Chairman and General Manager, Asbestos Construction Company, New York City;

*Leonard C. Maier, Jr.*, '48, as Vice-president of Marketing for Defense Products, Crosley Division, Avco Manufacturing Corporation . . . *Raymond F.*

*Rogers*, '48, as Treasurer, Polymer Corporation, Reading, Pa.

■ Special honors and awards announced recently for Alumni and members of the Faculty include:

To *Abbott L. Johnson*, '22, dedication of the airport of Muncie, Ind., as Johnson Field, by Vice-president Richard M. Nixon . . . to *Raymond P. Harold*, '23, the 10th Isaiah Thomas Award, by the Advertising Club of Worcester, Mass.;

To *James R. Killian, Jr.*, '26, the Washington Award, by the Western Society of Engineers . . . to *Robert B. Semple*, '32, its 1959 Prize, by the Commercial Chemical Development Association;

To *Professors Edwin R. Gilliland*, '33, and *John C. Sheehan*, its \$1,000 awards for achievements, respectively, in industrial and engineering chemistry, and for synthesizing penicillin and research in the synthesis of peptides, by the American Chemical Society . . . to *Richard H. Harris*, '48, designation as one of 10 "outstanding young men of Greater Worcester," by the Junior Chamber of Commerce, Worcester, Mass.;

To *Captain Richard C. Wingerson*, '52, the Mervin E. Gross Award, "given to the student in each class for the most outstanding performance and contribution through his resident tour," by the Air Force Institute of Technology.

## The Atomic Patterns of Crystals

■ Among the National Science Foundation's 1,006 grants totaling \$45,572,385 in one quarter of the government's fiscal year 1959 was one for \$63,500 to M.I.T. There also were others, of course, for work being done at the Institute, but this one was of special interest because it was for a project directed by Martin J. Buerger, '24, Institute Professor and recent recipient of the Roebling Medal of the Mineralogical Society of America. Under his guidance, four young scientists are embarking on a three-year, intensive study of eight lesser-known minerals. They will look into the structures and properties of crystals.

At least a year is needed, says Dr. Buerger, to determine the arrangement of the atoms in a solid substance by means of x-ray diffraction. One can find the distances between the atoms readily by this method, but discovering their arrangement is difficult. Only since 1946 has it appeared possible to solve the pattern-analysis problem by direct means.

"This problem is rather like that of an engineer who has before him all of the parts of a complicated steel-arch bridge, but no directions for fitting them together," Dr. Buerger explains. "At M.I.T. we have devised a method of 'image-seeking functions,' which employs a mathematical device to sort the distances between the atoms so that the atoms fall into the proper places in the pattern. But this system has definite limits at present and is only applicable to crystals of moderate complication. The atomic structure of highly complex crystals such as proteins is still unsolvable."

His associates are Charles T. Prewitt and Bernhardt J. Wuensch of this country, Tibor Z. Zoltai, from Canada, and Roberto Poljak, from Argentina.

## M.I.T. Fiesta In Mexico

■ On March 12-14, the 11th Annual Fiesta of the M.I.T. Club of Mexico, founded in 1910 as the earliest of the present 26 foreign M.I.T. Clubs, was favored by a record total of 56 visitors from the United States, Panama, and Peru, including as special guests of honor John J. Wilson, '29, President of the Alumni Association, and Sra. Wilson.

The program opened on Thursday, the 12th, with an assembly for cocktails at the Hotel Vasco de Quiroga, after which the ladies were escorted for luncheon at the home of Salvador Madero, Jr., '29. Meanwhile, the Alumni remained for luncheon at the Vasco, as pictured adjacently.

On Friday evening there was a cocktail buffet held on the 41st and 42d floors of the Latino-Americana skyscraper; on Saturday evening came the traditional *Noche Mexicana*, held in the spacious gardens of the home of Clarence M. Cornish, '24, the Club's President. Special color was lent to this occasion by many local members and ladies who wore costumes typical of various regions of Mexico.

**Top of page:** John J. Wilson, '29, President of the Alumni Association, is in the center of this *Noche Mexicana* group in the garden of the home of Clarence M. Cornish, '24, President, M.I.T. Club of Mexico. In white, behind him, is Sra. Wilson. **At right:** Charles E. Smith, '00, who was the 41st President of the Alumni Association; Lieutenant General Emilio Madero, '02; and Clarence M. Cornish, '24, (at right).

**Below:** At the head table for the opening alumni luncheon were (from left to right): J. A. Lunn, '17, 57th President of the Alumni Association; M. S. Vallarta, '21, former President of the M.I.T. Club of Mexico; Lieutenant General Madero, '02; J. J. Wilson, '29; C. M. Cornish, '24; H. E. Lobdell, '17, Executive Vice-president, Alumni Association; C. E. Smith, '00, 41st President, Alumni Association; S. Madero, Jr., '29; and A. M. Valdés, '25, Treasurer of the M.I.T. Club of Mexico. In front of Dr. Vallarta is Cecil H. Green, '23, of Dallas, Texas.





## Paul Weeks Litchfield: 1875-1959

■ Paul Weeks Litchfield, '96, dean of America's rubber industry and honorary chairman of the Board of the Goodyear Tire and Rubber Company, died on March 18 in Phoenix, Ariz. He was the M.I.T. Alumni Association's 36th President and twice served as an alumni term member of the M.I.T. Corporation, in 1918-1923 and in 1926-1931.

Mr. Litchfield was born in Boston in 1875 and attended Boston public schools. While a student at M.I.T., he investigated the possibilities of 28 industries and concluded that rubber was probably the most promising. When graduated, he accepted a \$9-a-week job with a firm manufacturing bicycle tires in Reading, Mass. In 1900, he went to Akron, Ohio, to join the



Paul Weeks Litchfield, '96

two-year-old Goodyear Company which later became the world's largest tire builder and rubber manufacturer.

Mr. Litchfield played a leading role in the company's world-wide expansion. Starting as superintendent of all production, development and engineering, he became factory manager in 1911, a vice-president in 1915, president in 1926, and chairman of the Board in 1930. Mr. Litchfield relinquished his responsibilities as chief executive officer of the company in 1956, but continued to serve as chairman of the Board and a member of various management committees until he retired in October, 1958.

His many notable accomplishments included the establishment of a Goodyear development department, which made such outstanding contributions to the tire industry as the first straight-side tire, the first cord tire, and the first pneumatic cord truck tire. He became interested in aeronautics before World War I and was for many years one of the world's leading advocates of lighter-than-air ships for commercial and military use. The aeronautics department which he formed at Goodyear produced hundreds of military observation balloons, the dirigibles U.S.S. *Akron* and *Macon*, and the stratosphere balloon which set an altitude record in 1935. During World War II, he played a major part in the synthetic rubber program and Goodyear Aircraft became one of the 10 largest producers of aircraft.

He received many awards, both domestic and foreign, and wrote extensively on business subjects. His books included *Autumn Leaves* (1945), describing a general philosophy of life; *The Industrial Republic* (1946), which set forth his views of employee relations, and *Industrial Voyage* (1954), an oft-quoted autobiography. His community honored him at a testimonial dinner last winter before he left Akron for his winter home in Litchfield Park, Ariz.

Mr. Litchfield is survived by his wife and two daughters, Mrs. Howard L. Hyde of Akron, and Mrs. A. Wallace Denny of New Toronto, Ontario.

## The Alumni Council's Meeting

■ What is the engineer's place in business management? John B. Rae, Associate Professor of History, explored this question at the March 23 meeting of the M.I.T. Alumni Council and found that the movement of engineers into management has been persistent, substantial, and increasing in volume.

Although there has been little perceptible relationship in some instances between a man's engineering training and his work afterwards, the influx of engineers into management has been too great to be ascribed to chance or coincidence, Professor Rae noted. The steady rise in the proportion of engineers gravitating to management, he believes, may be taken as an indication that they have proved reasonably successful in executive roles, even though it does not tell us in what ways their technological training contributed to this result.

The Council also received a report from D. Hugh Darden, Executive Secretary of the M.I.T. Educational Council. There are 735 of these counselors now and last year they interviewed nearly 3,300 applicants for admission to the Institute. Seventy per cent of last September's entering class of 921 had been interviewed by a counselor.

William L. Taggart, Jr., '27, chairman of the Alumni Day Committee, announced plans for the inauguration of Julius A. Stratton, '23, as the Institute's 11th President on June 15. The Alumni Day luncheon, reception, and banquet will follow, and the Boston Pops Orchestra will play that evening in Kresge Auditorium under the direction of Arthur Fiedler. Mr. Taggart proposed and the Council elected 19 persons to three committees. Wolcott A. Hokanson will head the Registration Committee; Albert O. Wilson, Jr., '38, will be chairman of the Luncheon Committee; and Philip H. Peters, '37, will be chairman of the Banquet and Entertainment Committee.

Edwin D. Ryer, '20, chairman of the Alumni Fund Board, reported that 10,764 Alumni had given a total of \$416,232 during the preceding nine months, and predicted that this will be the Alumni Fund's best year by a significant margin.

Donald R. Stevens, President of the Class of 1911, presented resolutions occasioned by the death of Orville B. Denison, '11, and the Council accepted them by a silent standing vote.

John J. Wilson, '29, President of the Alumni Association, presided and Donald P. Severance, '38, presented the secretary's report.

(Continued on page 366)

# Interplanetary Flight Propulsion Systems

Professor George P. Sutton lists some requirements and assesses the suitability of exciting proposals

## A TECHNOLOGY REVIEW REPORT

*Across the top of the cover of this issue of The Review is a list of the methods of propulsion for interplanetary flight that were considered recently by Professor George P. Sutton. Down the column on the left is a list of*

*interplanetary flight maneuvers that he considered. The circles indicate his view of the suitability, acceptability, and undesirability of these eight proposed means of propulsion for each of seven different maneuvers in space.*

**T**HE engines used for interplanetary flights in the future will be quite different from those used in ballistic missiles today. The maneuvers necessary to take instruments, cargoes, and men from planet to planet differ greatly in the demands that they impose on a propulsion system. The range of prospective missions is tremendous.

What will be required of the engines? What new problems will their designers face? For which missions are the various proposed new methods of propulsion most suitable? How will these new kinds of engines be developed and tested?

Professor George P. Sutton took up such stupendous questions as these in the fourth Minta Martin Lecture at M.I.T. this spring. Professor Sutton considered three kinds of missions: Those confined to the immediate vicinity of the earth and moon; those to planets no farther from the sun than Mars; and those to the outer part of the solar system beyond Mars. For trips to the moon and other satellites of the earth, a high acceleration rate such as one obtains with a chemical propulsion system is desirable. For trips to planets in the inner part of the solar system, less acceleration will result in sufficiently high velocities, and more methods of propulsion become interesting. For the still longer journeys to planets out beyond Mars,

even very low acceleration rates will give acceptable velocities when applied for months or years. For these very long journeys, he believes, electrical propulsion systems now seem to be "uniquely qualified."

### The Engines

Chemical rockets, he noted, are well developed and understood. All of the satellites have been hoisted into their orbits by chemical propulsion. Many different types and forms of chemical rockets have been explored and built. Their performance will be improved by the use of such high-energy chemicals as fluorine, hydrogen, and boron compounds, but the energy that can be derived from chemical combustion is limited.

Nuclear rockets still are in the exploratory or research stage. A nuclear fusion process would be attractive, but a prolonged fusion reaction has not yet been achieved. Meanwhile, there are two possibilities: A system in which heat is generated by a fission reaction; and one in which energy from the decay of radioactive isotopes is used.

Fission of uranium might provide the energy to heat the gases ejected by a rocket basically quite similar to the chemical, liquid-propellant rockets. A working fluid such as hydrogen might be gasified, raised to a high temperature by a nuclear reactor, expanded through a supersonic nozzle, and accelerated to very high velocities. The strength of materials at high temperatures, however, now limits the performance of nuclear rockets. Even flanges and bolts in the hardware adjacent to a reactor and rocket would have to be cooled to remain strong. Since there is no air in space, the radiation would not be scattered. Shadow shields could protect men and sensitive equipment, but are difficult to design. Co-ordinating nuclear activity and the flow of gases also looks difficult.

Isotope decay might provide the energy for a relatively simple propulsion system. If the right isotope is chosen, nearly all of the decay energy can be transferred to a working fluid, but such isotopes will be costly, the energy obtainable from them will diminish as time passes, and shielding against their radioactivity will be needed both at the launching site and in the

Professor Sutton came to M.I.T. from the Rocketdyne Division of North American Aviation, Inc., last fall as Jerome C. Hunsaker Professor of Aeronautical Engineering. He will leave the Institute shortly to become Chief Scientist for the Advanced Projects Research Agency of the U.S. Department of Defense. His views of the problems and engines of the future are both fascinating and worthy of every citizen's attention.





vehicle. Professor Sutton does not expect a nuclear device to fly soon.

An electrical propulsion system will be attractive when a light, compact nuclear reactor is developed. The specific impulse, or thrust derived from each pound of propellant per second, can be increased from 15 to 150 times by using an electrical system, and three different kinds of electrical systems are being considered.

*Arc heating* is one possibility. Electrical energy might be added to a working fluid within an arc struck between two electrodes. This arc could create a plasma, or electrically neutral fluid containing both positive ions and negative electrons, to be ejected.

*Magneto-plasma* is the name given to a second electrical propulsion proposal. In such a system, the plasma might be accelerated by changing magnetic fields, or by the interaction of an electric current and a steady magnetic field.

*Ion propulsion* is a third electrical possibility, and seems preferable because of its relative efficiency, simplicity, and prospects for prolonged operation. In such a system, electrons would be stripped from atoms by bringing dis-similar materials together. The resulting positive ions then would be accelerated in an electrostatic field and discharged at very high velocities. At the same time, the electrons previously stripped from the ions would be emitted, so that the ions could re-absorb them and be neutralized.

"Although considerable work is going on in all these and related fields," Professor Sutton said of the electrical propulsion proposals, "the effort is still largely exploratory. The technical problems are not only associated with the propulsive device but also with the power source and efficient conversion and control mechanism."

*Solar-heating propulsion* would call for an optical device to be pointed at the sun, so that a working fluid could be heated by its radiation. The energy available would depend on where you were; such a system would not function within the shadow of a planet, and at Pluto's distance from the sun you would receive only about 3.5 per cent as much radiation as you did in the earth's orbit. Small solar-heating rockets may be practical soon, but folding or furling a big optical system poses substantial design problems.

*Solar sailing* is applicable only in the general direction away from the sun. There can be no "tacking" as is customary with ships sailing against the wind. But solar sailing is attractive for some maneuvers; a ship, for example, might be turned around in a few hours by the pressure of light on reflectors extended from the vehicle on long arms.

### The Maneuvers

The velocity increments needed to execute the various maneuvers that will be necessary in an interplanetary flight will differ greatly. The vehicle must not only reach an orbit around the earth, like that of a satellite, but have sufficient velocity to *escape from orbit*. The acceleration (or ratio of thrust to weight) desired to do this will be high, and can be obtained best with chemical or nuclear propulsion. One's get-away would be much slower with an isotope-decay, electrical, or solar system.

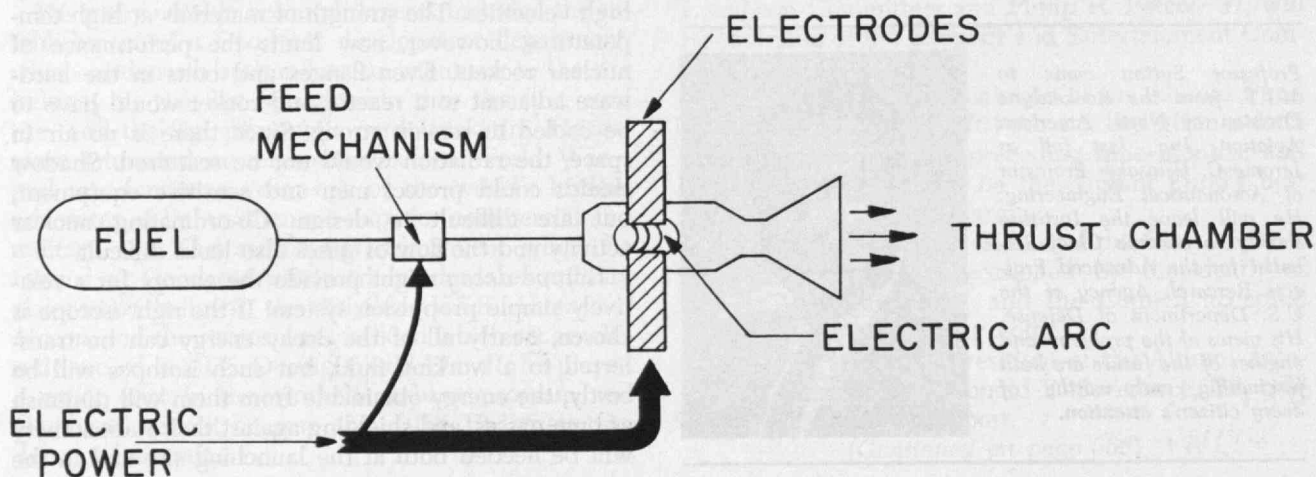
Next, the interplanetary traveler will need sufficient energy to get into an orbit around the planet that he wishes to reach. In this *interplanetary transfer* maneuver he must overcome the sun's gravitational field and correct for differences in the tangential velocities of the planets between which he is traveling. His time of departure and scheduled arrival time affect this propulsive demand.

Since the orbits of the planets are not in a single plane — Mars, for example, moves in a plane inclined 1.85 degrees to that of the earth — provision also must be made for a *change of plane*. The energy required for this will vary considerably, depending on the relative positions of the launching and target planets.

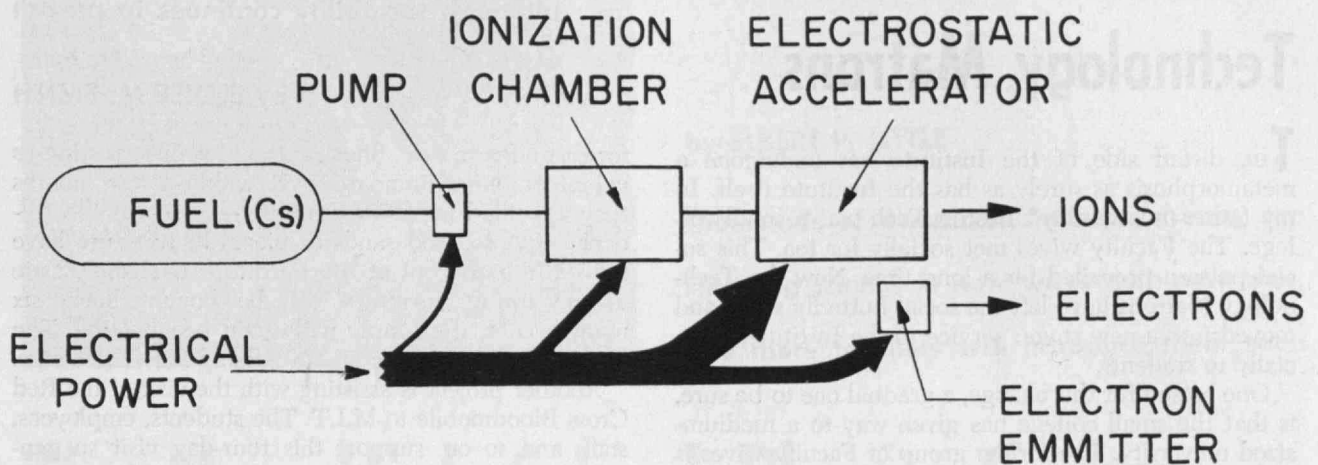
Some energy will be needed, too, for *vehicle orientation*, or adjustment in the pitch, yaw, and roll to orient the spaceship in a specified direction, but a simple auxiliary system may suffice for this. *Trajectory corrections* also will be necessary to compensate for errors in the map of the solar system and in navigation and guidance, but these probably can be made slowly.

The *target approach*, or adjustment of the velocity of the ship to match that of the planet which is to be its destination, may call either for acceleration or deceleration. If one relies on a low thrust-to-weight ratio engine, this maneuver will have to be started some

## ARC HEATING PROPULSION



## ION PROPULSION



distance away from one's destination. With a high-acceleration engine, it can be begun later.

The *capture* maneuver will bring the vehicle into an orbit around the planet it is headed for, and will call for relatively large forces. The final landing from this orbit also will require high thrust. Here, as at the take-off, the chemical and fission propulsion systems appear to be most suitable.

"The low thrust-to-weight ratio engines are particularly suited for interplanetary transfers, and the higher thrust engines for operation in a fairly strong gravitational field," Professor Sutton pointed out. "This means that different engines will be used for different maneuvers.

"If, for example, it is desired to send an exploratory probe to become a satellite of Jupiter, it would be reasonable to have one or two chemical or nuclear rockets for earth escape, an electrical system for the transfer orbit and its corrections, the same electrical rocket stage for an approach to Jupiter and the vehicle's capture into a satellite orbit (perhaps even a separate chemical rocket to augment this maneuver), the same electrical rocket for the escape from Jupiter and the return interplanetary transfer, and even some of the slowing-down maneuver, and finally perhaps

another chemical rocket for the capture maneuver into a decreasing orbit about the earth."

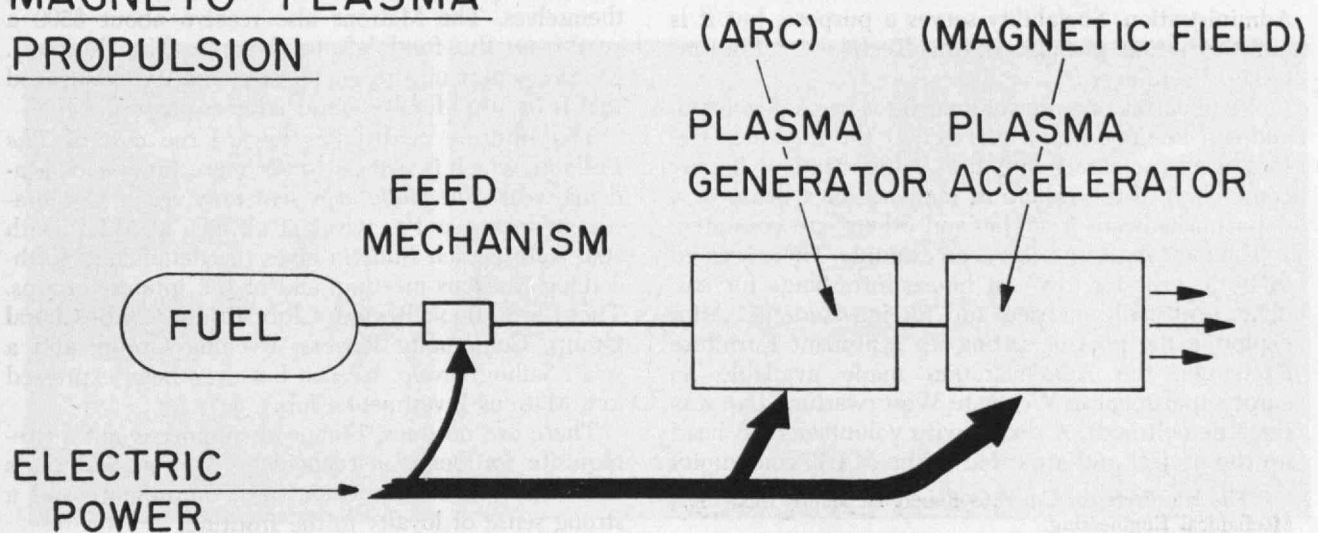
### The Strange Environment

The environmental conditions in which the engines of interplanetary vehicles must operate are not too well understood, but some of the difficulties can be foreseen. Prolonged exposure to a high vacuum could cause some materials, such as are now used in soldering, simply to disappear, and might affect the strength of other materials. During much of an interplanetary journey, gravity will be zero within the vehicle, and this will affect the separation of vapors from liquids, the emptying of tanks, and the operation of switches and valves. The thermal equilibrium of the engine will be affected by the design of the vehicle, and its builders will face unusual problems of dissipating heat.

The space engines, moreover, will be subjected to various kinds of radiation and the impact of meteorites and meteoroids. Hence, it may be fortuitous, Professor Sutton remarked, that heavy structures are needed with certain types of propulsion systems. The heavy tanks of thrust chambers required for chemical sys-

*(Concluded on page 380)*

## MAGNETO - PLASMA PROPULSION





# Today's Technology Matrons

THE distaff side of the Institute has undergone a metamorphosis as surely as has the Institute itself. In my father-in-law's day\* Boston Tech was a small college. The Faculty wives met socially for tea. This social pattern prevailed for a long time. Now the Technology Matrons have left the social butterfly stage and moved into a new stage: service to the Institute, especially to students.

One reason for this change, a gradual one to be sure, is that the small college has given way to a medium-sized university. The former group of Faculty wives is now an organization of about 2,000 women whose husbands have the equivalent of staff status at M.I.T.: 716 wives of teachers; 140 wives of administrative, medical, and athletic department staffs; 333 wives of Lincoln Laboratory staff; 446 wives of Instrumentation and other defense laboratory staffs; 186 women staff members; and 120 Honorary Matrons, most of whom are wives of retired professors, or widows.

Without Matrons' meetings, the wife of a professor might never meet wives of men in research or the



*The home-furnishings exchange in action.*

Administration. Sociability serves a purpose, but it is not the prime purpose of the Technology Matrons today. Usefulness is.

We undertake no project unless it is needed, wanted, and can be done by no one else at the Institute. The idea is then cleared with the Administration. It may come close to the sphere of influence of a dean, or a department head; if so, he, and others, are consulted.

The most recent project is an example. There seemed to be a need for low-cost house furnishings for students, especially married and foreign students. After exploring the idea of setting up a Student Furniture Exchange, the Administration made available an empty apartment in Westgate West (wartime barracks since demolished). A dean's wife volunteered to head up the project and appealed to the M.I.T. community

\* The late Professor Emeritus Robert H. Smith, 1886-1932, Mechanical Engineering.

Usefulness, as portrayed in the Furniture Exchange below, is keynote for Matrons although sociability continues to prevail

by ELOISE M. SMITH

for cast-off furniture. She and the Matrons assisting as volunteers were inundated, yet within a few months they appealed for more furniture — such was the student response. Thousands of pieces of furniture have moved into and out of the Furniture Exchange. Late in the spring, furniture will be bought back; six months later, the supply will again be depleted. The Furniture Exchange is at 224 Albany St., Cambridge.

Another project is assisting with the visit of the Red Cross Bloodmobile to M.I.T. The students, employees, staff, and so on, support this four-day visit so generously that it requires 32 Matrons to provide nontechnical assistance. Other matrons assist at the Homberg Infirmary, especially during epidemics, and continuously with the mending for the Infirmary.

One of the most successful projects is the entertaining of foreign students who number over 700. We want these visitors to acquire a friendly, realistic attitude toward American family life. Faculty members are especially interested in this Matrons' project and they usually entertain their own students. Lincoln Laboratory families enjoy meeting foreign students, too, and do more entertaining each year, especially for Freshmen.

Another Matrons' service, not duplicated on any other campus so far as we know, is helping married foreign students find housing. A letter is sent to their homes before they leave for the U.S.A., offering this service. If they wish, they are met at the point of arrival in Greater Boston. Temporary quarters are found and then a Matron drives them to look at vacant houses and apartments. They are assisted, if they wish, with shopping and other practical domestic know-how.

Later in the fall a group of Matrons invites the foreign wives to supper. Much of their timidity is gone by then, and they usually ask many questions, especially about medical services.

How are these, and many other, useful projects financed? Wholly by contributions from the Matrons themselves. The Matrons also receive about \$500 a year from the fund left to them by Mrs. Forris J. Moore, widow of a professor of chemistry, who asked that it be used for "teas and other expenses."

The Institute contributes toward the cost of *The Bulletin*, which is sent out six or more times each academic year. *The Bulletin* is sent to wives of Corporation members and to wives of all men at M.I.T. with staff status. Each *Bulletin* gives the details of a forthcoming Matrons meeting, and of the interest groups. These are: Book Review Club, Bridge Club, Choral Group, Community Players, Evening Group, and a small Sailing Group. Interest has even been expressed in a Matrons Investment Club.

There are no dues. Financial support is not a prerequisite for being a Technology Matron, just one's husband's M.I.T. association (past or present), and a strong sense of loyalty to the Institute.



by ELBERT P. LITTLE

Thousands of American students already are studying science in new ways with new aids, and more teachers will introduce them soon

# The New High School Physics Course

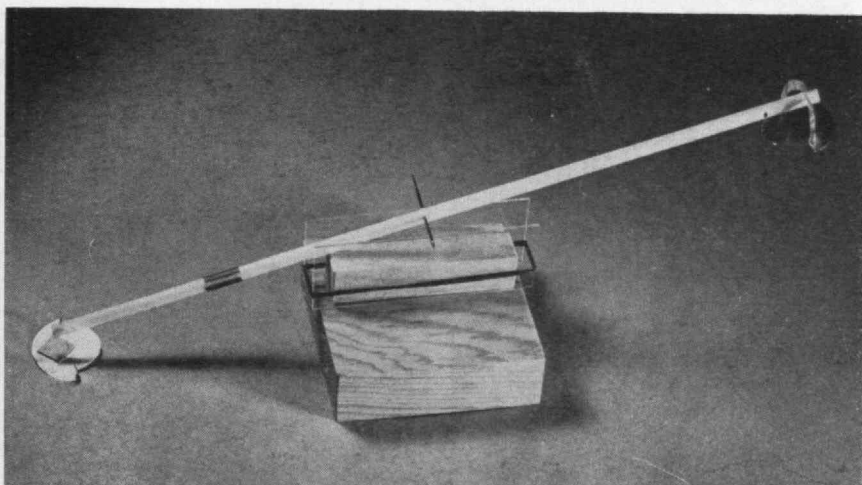
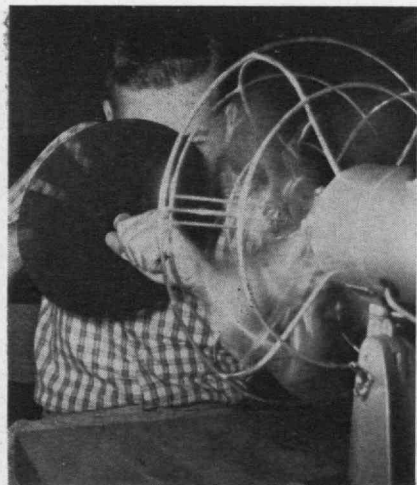
**I**N 270 secondary schools, 12,500 students now have passed the mid-point in a new physics course developed by the Physical Science Study Committee which was formed at M.I.T. in the fall of 1956. The course will be revised, in the light of reports from teachers now using it, and introduced in more schools next year. By the fall of 1960, the committee hopes, materials will be ready for widespread distribution, many more teachers will have been familiarized with it, and many students will be finding science more rewarding.

The materials being developed include a new textbook, new laboratory apparatus and manuals, teaching films, guides for teachers, and a series of books for supplementary reading. The pictures on this and the next three pages include illustrations from the text, show examples of the laboratory apparatus, and give one a few glimpses of the work now well under way.

The course begins with an introduction to physics, physicists, and the tools of physics. A general study of the nature of time, space, motion, and matter fol-

Above: Professor Jerrold R. Zacharias studies his script during a pause in production of physics teaching films in the Watertown, Mass., studio of the committee that he heads.

Below: (Left) A student uses a slotted-disk stroboscope to "stop" an electric fan. (Right) He will also use microbalances, made of soda straws, sewing needles, and microscope slides.



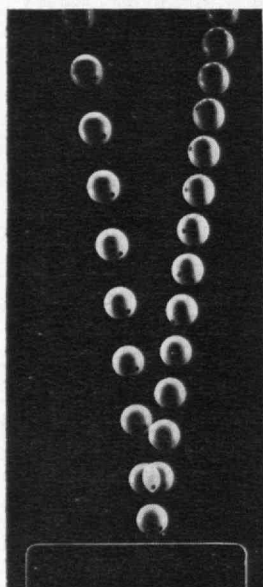




Above: A split-image range finder is used to see how triangulation is employed to measure distances.

Left: A strobe photo of a bouncing ball shows the correspondence between reflection of a particle and the optical phenomenon of reflection of light from flat surfaces.

Below: The optical reflector at left shows that curved reflectors can be thought of as formed from many small, flat reflectors. To study phenomena associated with wave reflection from flat and curved surfaces, students are using ripple tanks. Water-wave patterns generated in glass-bottomed tanks are projected on paper screens (as at the right).



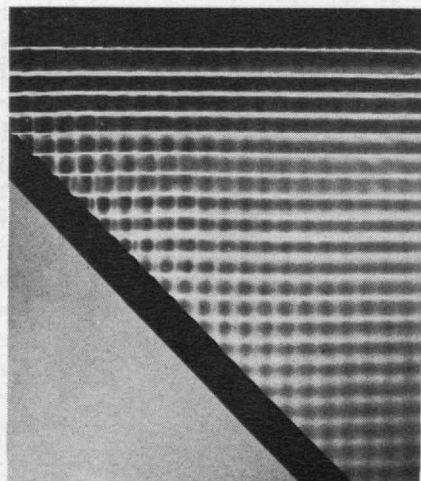
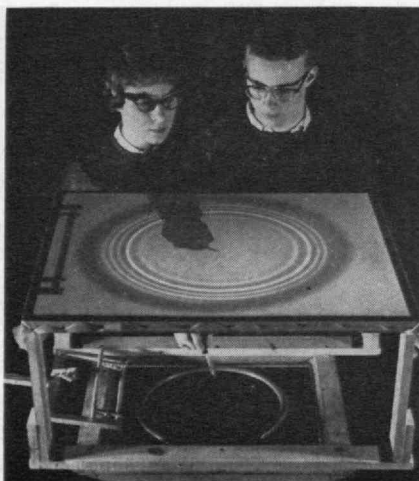
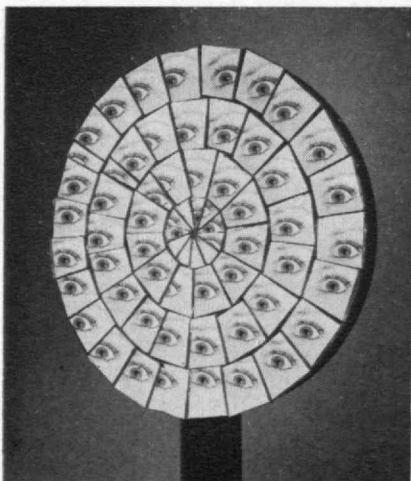
lights, and measurement and mathematics are presented as the analytical tools of physics.

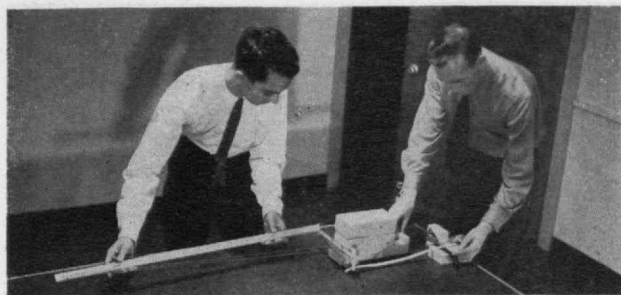
Light is studied in the second quarter. Optical phenomena are examined, the particle and wave models of light are considered, and a high point comes when the student finds it necessary to reject the particle model on the basis of his own observation.

In the third part of the course, he studies mechanics, with the emphasis on Newton's law of motion and the conservation of momentum and energy.

Modern atomic physics is reached in the last quarter. Electric and magnetic forces lead into the study of atomic structure. Then, while examining such phenomena as the photoelectric effect and electron diffraction, the student comes to the break with classical physics where light is seen to have particle characteristics and matter exhibits wave properties.

The committee's objective has been not merely to strengthen existing courses with teaching films and other supplementary learning aids, but to devise a





Above: Concepts of acceleration are developed by applying a force to a roller-skate cart loaded with bricks.

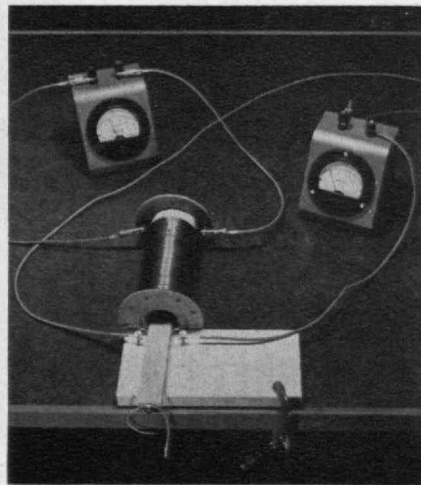
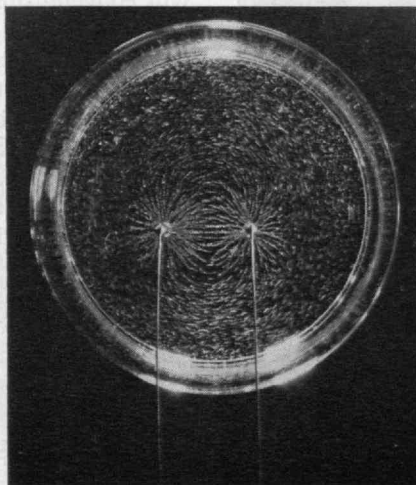
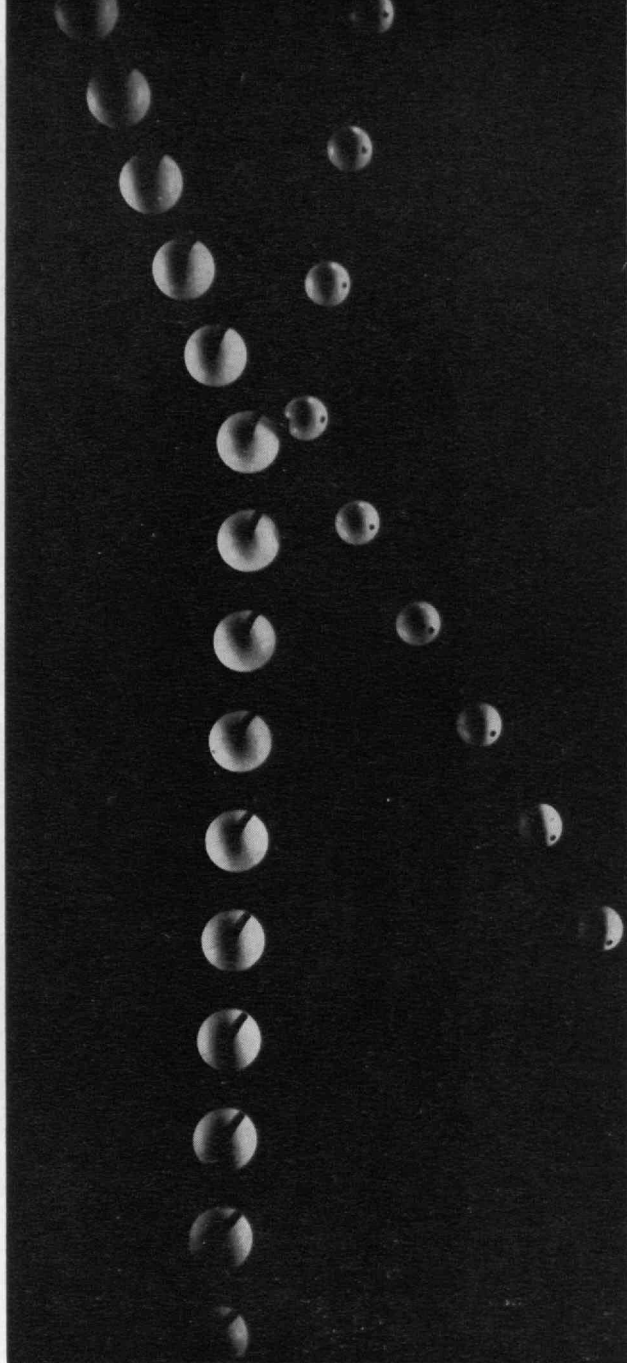
Right: Conservation of momentum is illustrated by a strobe photo of a collision between balls that differ in mass.

Below: A coffee can containing an aluminum-coated soda straw pivoted on a needle becomes an electroscope. The seeds suspended in a liquid interface (in center) line up around oppositely charged electrodes. The simple current balance (at the right) is used by students to determine the magnetic field strength within a solenoid coil.

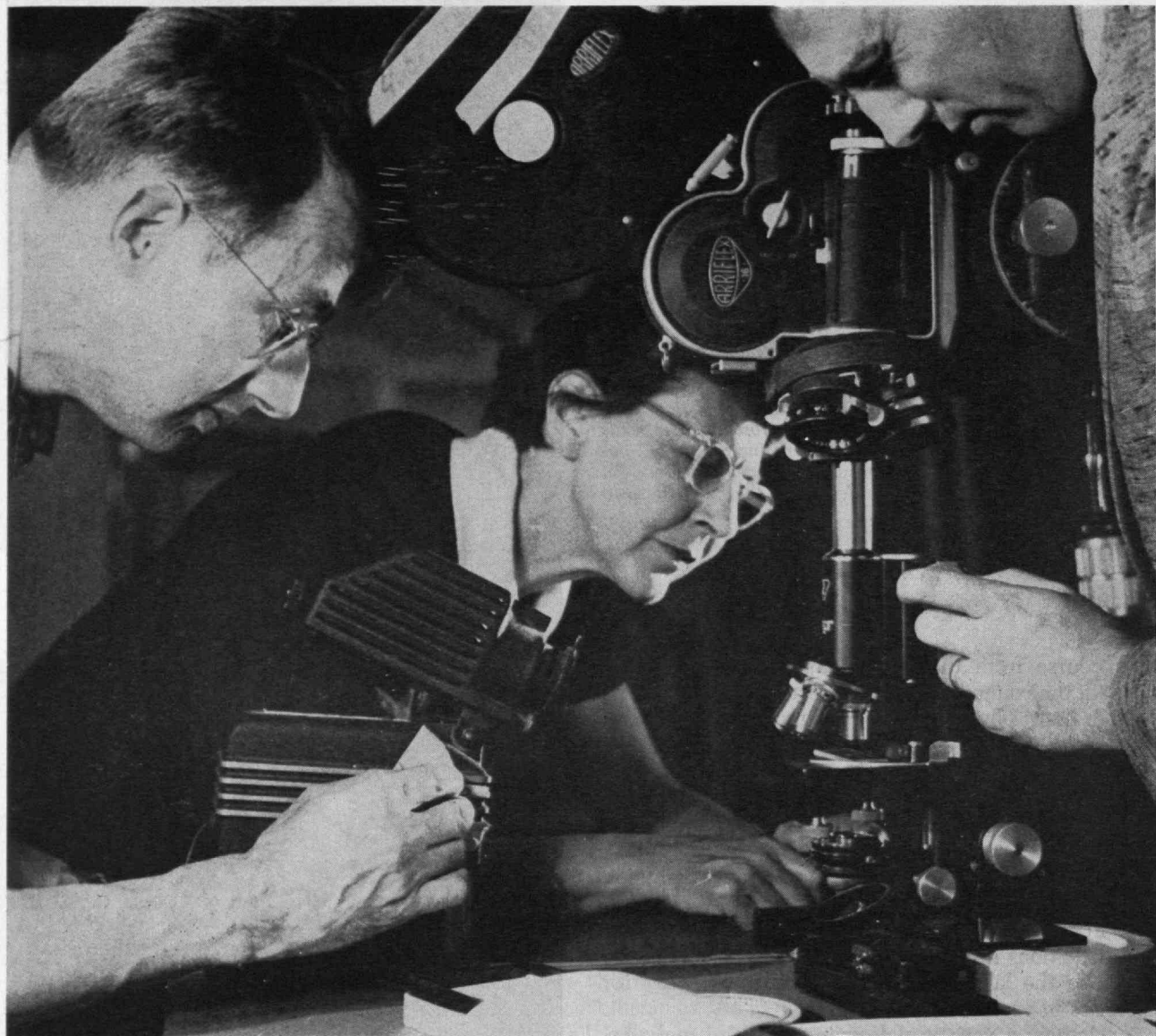
new course from the ground up. Such a course is needed, the committee found, in order to:

1. Present physics as an integrated subject, emphasizing its great unifying concepts;
2. Include the important innovations in physics of the last quarter century;
3. Introduce physics as a cultural stimulus, and show physicists as real people;
4. Impart appreciation of the evolution of physics, past and present;
5. Follow a phenomenological approach, with laws and definitions arising from observation and analysis;
6. Use the laboratory for learning rather than for exercises in verification;
7. Employ a variety of learning aids and make extensive use of modern audio-visual techniques; and
8. Meet the needs of students having a broad range of talents, interests, and career plans.

In addition to developing learning aids, the committee has inaugurated a teacher-familiarization pro-

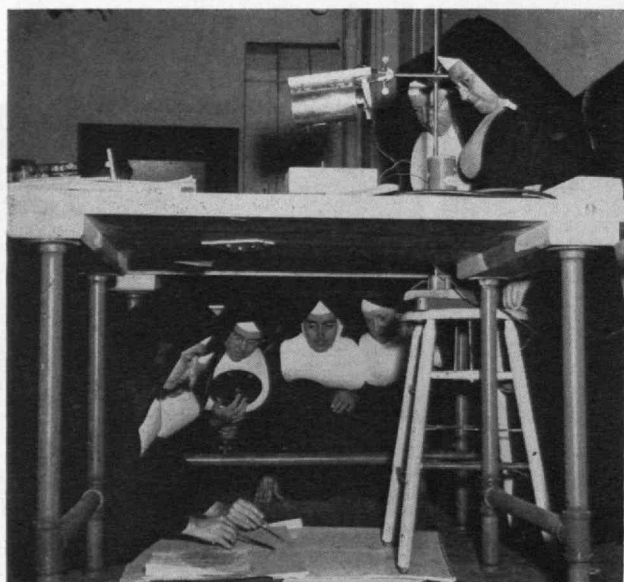






Above: Film production staff prepares photomicrographic equipment to be used in a motion picture dealing with crystals.

Below: Teachers measure wave length in ripple pattern projected on laboratory floor during a familiarization course.



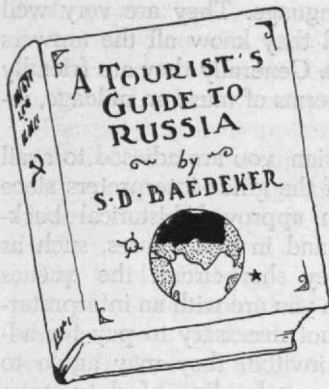
Physical Science Study Committee Photos

gram in co-operation with the National Science Foundation and several sponsoring colleges and universities. Five institutes were conducted last summer, 15 will convene this summer, and other teachers are attending evening and Saturday morning courses now in more than a dozen in-service institutes.

The small group of scientists and educational leaders who formed the Physical Science Study Committee in the office of Jerrold R. Zacharias, Professor of Physics at M.I.T., has grown into a large organization. More than 250 college physicists, high school teachers, industrial scientists, and technical specialists have helped plan and create the new course.

M.I.T. administered the study for two years and financial support was derived from the National Science Foundation, the Fund for the Advancement of Education, the Alfred P. Sloan Foundation, and other private sources. Now a new nonprofit corporation, known as Educational Services, Incorporated, has taken over administration of the significant program.

# If You're Going to Russia...



by SECOR D. BROWNE

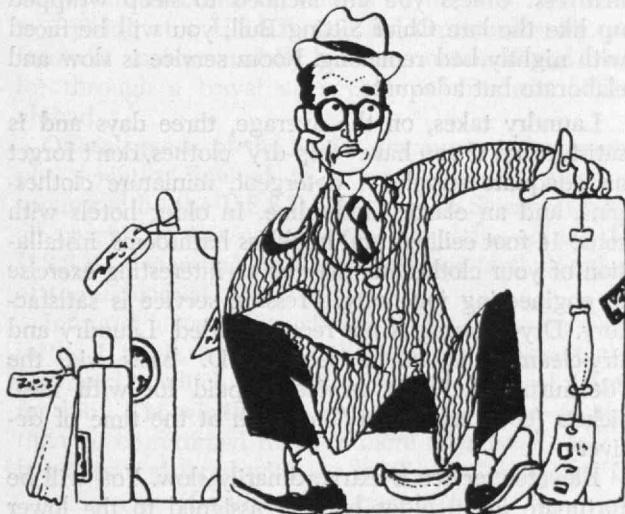
**ARRIVAL:** Immediately upon arrival in the U.S.S.R. your passport will be taken and you will be held in a waiting room for about a half hour until it is returned. You will be required then to fill in a currency declaration listing cash and travelers' checks in your possession.

You are not permitted to carry Soviet currency into the U.S.S.R. or take Soviet currency out with you. Be sure to keep the duplicate of your currency declaration because you may be required to surrender it when you leave the U.S.S.R.

Your luggage probably will not be inspected and you may or may not be required to sign a customs declaration. The speed and ease of formalities depends in large measure on who you are, in Soviet estimation, and by whom, if anybody, you are met. At worst, however, the formalities are slow rather than onerous.

**AIR TRAVEL:** Flights to, from, and in the U.S.S.R. can be arranged through your travel agent or local air line office. Once in the U.S.S.R., you must reconfirm your air schedule or make any changes through the Intourist Office in your hotel. Reconfirmation is a lengthy process and Intourist may keep your ticket two or three days. Changes in schedule are not easily or rapidly made and are to be avoided, particularly if they involve continuing travel by foreign carrier.

Intourist provides ground transportation to and from the airport and will get you there in plenty of time. You probably will not be notified of any delay



You'll find some customs strange, and others familiar, this guide for tourists points out

These nuggets of advice, arranged alphabetically, for visitors to the U.S.S.R., have been provided by an Assistant Professor of Russian at M.I.T., who was there on a cultural mission last fall. His purpose was twofold: To clarify similarities and differences between the U.S. and the U.S.S.R.; and to assist professional men who plan to visit Russia this year if cultural contacts continue.

or cancellation of your flight until some time after your arrival at the airport, and even then information as to what will happen next and when, is hard to obtain, likely to be conflicting, and always subject to revision without notice. It is advisable to follow the example of Soviet travelers and relax in a heap with your belongings until something happens.

**CABLES:** There are two classes of service: straight, or delayed. A straight cable usually will be delivered overnight. A delayed cable is considerably cheaper but may take two or three days.

To avoid error and delay, it is advisable to print the message in block letters. The more conscientious clerks will try to talk you out of (in their opinion) superfluous words and expressions such as "love."



**CHURCHES:** Most churches of historic interest are maintained only as museums. St. Isaak Cathedral in Leningrad is an antireligious museum. Russian Orthodox services are held in some churches in Moscow, Leningrad, and elsewhere. Roman Catholic mass is said on Sundays in a building of the Moscow headquarters of the Ministry of the Interior (MVD) and in a Roman Catholic church in Leningrad. Protestant and Jewish services are held in both Moscow and Leningrad. The Intourist Office in your hotel will advise you of the hours of services and provide transportation.

**CURRENCY:** Foreign currency can be exchanged and travelers' checks cashed at banks, or more conveniently, at the exchange desk found at the airport and in most hotels. The official exchange rate is four rubles to the dollar but the tourist rate given the visitor is 10 rubles to the dollar. At the time of exchange you will be given a receipt stating the amount of rubles received. These receipts should be kept for currency clearance when you leave the U.S.S.R. The rubles which you still have at the time of your departure





can be exchanged for a draft in dollars which can be cashed through your bank after you return to the U.S.

There is a black market in the U.S.S.R. in foreign currency, clothes, cigarettes, and so on. You may be approached by young men who wish to practice their English. Shortly thereafter they may wish to practice changing rubles for dollars at 30 or 50 to one, or rubles for shirts, shoes, suits, cigarettes, or other items. They may have ikons or other works of art to offer. Since there are very few things which you are likely to wish to purchase, you have no real need for their cash rubles. As for ikons and *objets d'art*, it is nearly 42 years since the Revolution, and the quality and genuineness of such articles offered now is at least questionable. Moreover, it is possible that the young men are representatives of the MVD, and you might not enjoy being bailed out by the U.S. Embassy and asked to leave the U.S.S.R.

**DRINKS:** There are no bars, saloons, or cocktail lounges. Spirits (vodka, brandy), beer, and wines are served in restaurants and can be purchased in bottles in grocery stores or at your hotel.

#### FORMS OF ADDRESS:

The visitor will be addressed as "Mister," "Doctor," or "Professor," as appropriate. The hotel staff will often use "Gospodeen." Soviet hosts whom you have met in the United States may address you by your first name. Soviet citizens usually address each other by the first name and patronymic: Ivan Ivanovich; rarely, and then only collectively or formally as "Comrade" (Tovarishch), or "Citizen" (Grazhdanin).

**GUIDES:** Your hotel Intourist Office will assign you a guide-interpreter for the term of your stay. The guide ordinarily works from 9:30 A.M. to 6:00 P.M. six days a week and if needed, a substitute interpreter will be assigned on your regular person's day off.

The majority of the interpreters are girls, graduates of the Institute of Foreign Languages, with an excel-

lent command of the language. They are very well trained and you will find they know all the answers and most of the questions. Generally they are friendly and co-operative and, in terms of museum mileage, inexhaustible.

Even if you speak Russian, you are advised to avail yourself of the services of the guide-interpreters since they are well briefed in approved historical background and information and in many cases, such as visiting the Kremlin, they short-circuit the queues awaiting admission. When you are with an interpreter-guide, it is also usually not necessary to pay for admission to museums. If invited, they may agree to accompany you, outside regular line of duty, to a restaurant or theater. Guides do not accept tips but, if one has been especially interested and helpful, some small gift is not out of order. Such a gift can be a booklet of views of your part of the U.S., a tie, or a lighter — perhaps for the guide's father or husband inasmuch as few women in the U.S.S.R. are smokers.

**HOTELS:** Upon arrival, you will be assigned by Intourist to one of their hotels. Such usual hotel functions as the arrangement of transportation, tours, sight-seeing, limousine service, theater and amusement tickets, guides and information are carried out by the Intourist Office, which also furnishes booklets of meal tickets (coupons, "talony") for use in the hotel and other Intourist restaurants.

At the hotel desk you will find an administrator (manager) who will assign your room upon arrival and clear you when you depart. Each floor of the hotel is controlled by a *dezhurnaya* (floor clerk) who keeps your room key, mail, and messages, arranges for laundry, pressing, and so on.

Size and decor of the rooms depend somewhat on whether the hotel is pre- or post-Revolution. The furnishings in either case tend to be ornate and massive with heavy brocades and tassels. Heat and hot water are generally adequate in the larger cities, not so in smaller places. There is a tendency for water closets to run continuously. Plugs for wash basins are universally absent and you are advised to take along a large diameter flat rubber kitchen sink stopper.

The rooms and linen are clean. You may view the system of bedmaking with a quizzical eye since the bedclothes are neatly folded but not tucked under the mattress. Unless you are inclined to sleep wrapped up like the late Chief Sitting Bull, you will be faced with nightly bed remaking. Room service is slow and elaborate but adequate.

Laundry takes, on the average, three days and is satisfactory. If you have "drip-dry" clothes, don't forget an adequate supply of detergent, miniature clothespins, and an elastic clothesline. In older hotels with some 14-foot ceilings and hookless bathrooms, installation of your clothesline may be an interesting exercise in engineering ingenuity. Pressing service is satisfactory. Dry-cleaning is not recommended. Laundry and dry-cleaning is on a semi-C.O.D. basis via the "*dezhurnaya*." Room service is paid for with meal tickets (coupons, "talony") or cash at the time of delivery.

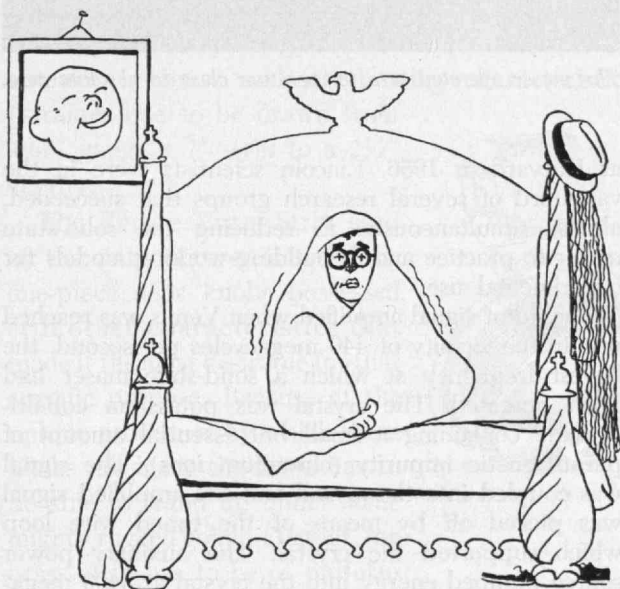
Elevator service is extraordinarily slow. You will be fortunate in an older hotel if assigned to the lower



floors so that you can use the stairs. A travel alarm clock is a good idea since the request "wake me at 8:00," can get lost in the language and be interpreted by the staff either overzealously or not at all.

The hotel grill or restaurant will open at 8:00 or 9:00 A.M. in the morning. The menu is in five languages: Russian, English, French, German, and Chinese. Service, by U. S. standards, is extraordinarily slow.

The hotel will have a newsstand, gift counter, and post office-telegraph desk in the lobby. The newsstand provides postcards, magazines, newspapers, and books. In Moscow and Leningrad the assortment includes some English language editions of Soviet publications. The gift counter offers souvenirs which, if they appeal to you, you might as well buy there since the price for any article will be the same everywhere. The post office-telegraph desk sells stamps, stamped envelopes, and stamped picture postcards in addition to accepting telegrams and cables.



**INTOURIST:** The Soviet state tourist agency is said to have once been a branch of the MVD. Intourist's official full name now is the Union-Wide Stock Society. Intourist is responsible for the transportation, lodging, meals, tours, guides, interpreters, amusements, and security of visitors to the U.S.S.R. Prior to arriving at a U.S.S.R. port or airport of entry, an Intourist voucher usually has been obtained and paid for through a travel agency or an Intourist Office abroad.

Official guests of the Soviet government (for example, scientists invited to a conference or meeting sponsored by the U.S.S.R. Academy of Sciences) have all or part of the cost of the visit defrayed by the U.S.S.R., depending on the importance to the Soviets of the individual's visit.

Intourist takes the voucher upon the visitor's arrival in the U.S.S.R. (usually at the Intourist Office in the first hotel to which he is taken), and issues meal tickets for him. The visitor's passport is also taken at this time, to be returned three or more days later, after it has been registered with the local office of the MVD.

*(Continued on page 378)*

## The Contrasts in Russia Fascinate an Alumnus

by ELLIOTT B. ROBERTS, '21

**V**ISITING the Soviet Union as a delegate to the recent International Geophysical Year conference, I met leading scientists, visited research institutions, and roamed the streets of Moscow and other cities. It was a revealing experience — depressing, it is true, but what I saw fascinated me mightily. Strange contrasts were on every hand, all serving to illuminate the vigor of Soviet industry.

My hotel and six other towering palaces reach skyward in rococo grandeur from dismal jungles of dilapidated tenements and log houses. The plaster flakes off and bricks fall out of still-unfinished apartment buildings in the 600,000-unit housing projects outside Moscow, yet clocks everywhere, even in busses and taxicabs, are precisely on time — there is no deviationism among Moscow timepieces! Neckties are non-existent, and unkempt loungers fill the hotel lobby, yet no one will commit the indecency of licking a postage stamp. The largest atom-smasher in the world, a proton synchrotron rated at 10 billion electron volts, is working not far from Moscow, while the hotel cashier and the store clerk compute your change on the archaic abacus, because the factories are too busy to make cash registers. The subway runs smoothly, carrying its daily load of 2,500,000 workers from unbelievably squalid homes, who pass through 40 resplendent stations decorated with marble panels, statuary, oil paintings, and crystal chandeliers. Heavy trucks rumble through the dark streets by the hotel. Welders' sparks fall day and night from a massive new bridge, growing across the Moscow River.

Some of the streets and squares must be the widest in the world — veritable parade grounds! They are certainly the cleanest, with old women poking at every scrap of litter with twig brooms, and woe to the cigarette-dropper seen by a sharp-eyed policeman! With no speed limit in the streets, pedestrian crossings provide breath-taking contests with rugged trucks, well-worn busses, and handsome trackless trolleys. Black, curtained limousines, dashing madly through the traffic, can sometimes be seen screeching to a halt to save harming unruffled flocks of street pigeons. The few private automobiles used by writers, scientists, ballet dancers, and other privileged members of the classless society, are Russian copies of the sensible American small cars of a decade ago. The sidewalks swarm at all hours with workers en route to their jobs or walking to escape the confinement of their cell-like apartments.

These cheerless people seldom dare more than a furtive glance at a foreigner, except the small boys who offer souvenir pins and beg for chewing gum, but will accept no coins. Stolid and impassive, they drift along in shapeless and ugly clothes, or stand in the inevitable queues to purchase food and cheap articles of living. There are no luxuries. Style and color are eagerly sought by the women, but quality is not to be found. Knots of wistful women collect

*(Concluded on page 376)*



# The Remarkable "Maser" Story

This new kind of amplifier helped contact Venus and will make more exciting news

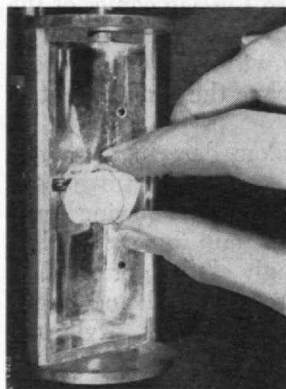
by Benjamin Lax and Harry C. Gatos

*Benjamin Lax, '49, has provided dynamic leadership of Lincoln Laboratory's solid-state research program for more than seven years and is now head of the recently organized Solid State Division at the Laboratory. Harry C. Gatos, '50, Associate Head of the Division, is also leader of the Solid State Chemistry and Metallurgy Group which developed the maser materials.*

**A** SOLID-STATE "maser" amplifier was the final link in the chain of technological developments which enabled the M.I.T. Lincoln Laboratory's radar apparatus to contact Venus. Because of its importance in this experiment, and because this was the first time a solid-state maser was used for any purpose other than research on the maser itself, this is an appropriate time to review its origins and implications.

An amplifier is a device which causes an input signal to be increased in strength. An auxiliary source of power is required, of course, to make the signal put out by the amplifier more powerful than the signal put in. In this sense, the maser is no different from the vacuum tube and the transistor.

The name "maser" (like "radar," for "radio detection and ranging") is an acronym for "microwave amplification by simulated emission of radiation," a phrase which is descriptive of the physical process by which the maser produces amplification of electrical signals at microwave frequencies. The heart of the solid-state maser is a single crystal of carefully controlled composition, which stores energy pumped into it from an auxiliary power source. In response to the triggering action of a microwave input signal, the stored energy radiates out of the crystal at the signal frequency with several hundred times the signal input power.



*This was the crystal.*

The ultra-high-frequency maser used in Lincoln's Venus experiment was developed during the summer of 1957 by Robert H. Kingston, '47. The principle of the device had been demonstrated in a gas maser at Columbia University in 1951. Exploitation in a solid-state maser of properties peculiar to certain crystalline materials at very low temperatures had been proposed



*The maser operated at a temperature close to absolute zero.*

at Harvard in 1956. Lincoln scientists were in the vanguard of several research groups that succeeded, almost simultaneously, in reducing the solid-state maser to practice and in building working models for experimental use.

The input signal amplified when Venus was reached was in the vicinity of 440 megacycles per second, the lowest frequency at which a solid-state maser had been operated. The crystal was potassium cobalt-cyanide containing a small but essential amount of paramagnetic impurity (chromium ions). The signal was coupled into the crystal and the amplified signal was picked off by means of the tuned wire loop which supported the crystal. The auxiliary power source pumped energy into the crystal at 5400 megacycles per second via the cylindrical cavity in which the crystal was mounted.

To achieve the desired performance with such an amplifier, the whole assembly (with the cavity closed) is operated in a bath of liquid helium, at a temperature 1.25 degrees Kelvin above absolute zero. The low temperature reduces the disturbing effects of thermal vibrations of the crystal lattice, with two important results:

1. It makes possible the storage of microwave energy in the crystal;
2. It makes the crystal electrically quiescent, so that the extraneous electrical noise generated within the crystal is very small.

It is this latter property that makes the maser so valuable for amplification of very weak signals. Laboratory measurements have shown that the noise from a maser is at least 100 times less than that from a conventional amplifier. The primary limitations on noise in a maser system are set by the associated circuitry rather than by the maser itself.

The maser used when Venus was contacted cannot be isolated from other facets of solid-state research  
(Concluded on page 374)

# BUSINESS IN MOTION

## To our Colleagues in American Business ...

Although miles apart in their functions the door knob and sink strainer shown below have one thing in common. Both are made from Revere Brass Strip. Revere Leaded Brass Strip was used to make the sink strainer because of the ease with which large diameter threads are machined, the excellent surface it develops for chrome plating, the inherent corrosion resistance of brass and its drawing characteristics (strainer had to be drawn from .065" gauge x 7" strip to a 2½" depth).

The Revere Brass Strip used by the manufacturer of seamless, one-piece door knobs possessed still other characteristics that made it the most desirable for that specific purpose. Because of the unique procedure by which these knobs are made the brass has to be able to stand up under some mighty rugged going. Further, the brass strip has to be of uniform gauge and be without any sign of fracture or crimping when drawn, as well as have consistently correct grain structure to insure a smooth, flaw-free surface on the finished knobs without extensive finishing and polishing operations.

These are but two of the literally thousands of ways Revere Brass Strip makes it possible for manufacturers to offer *their* customers a superior product at the lowest possible cost.

The combination of unusual properties makes Revere Brass Strip, in various anneals and tempers, equally suited to stamping and spinning. Manufac-

turers have found that the high ductility and malleability of various Revere Brass Alloys effect savings in time and cost because deeper draws in one operation are possible. And, because of the low, work-hardening rate, a combination of forming processes is frequently possible in making intricate shapes without the need for intermediate annealing. Should annealing be required the temperatures used are low (usually not over 1100°F.) which means lower fuel cost.

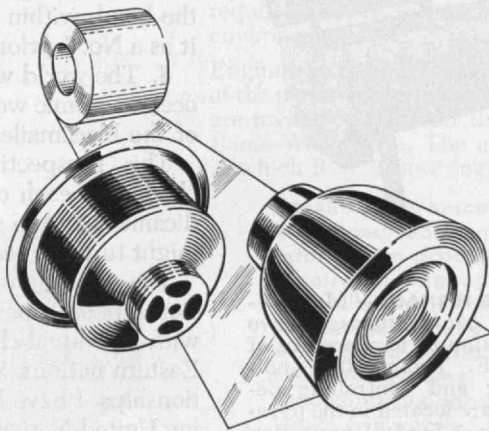
Revere Brass Strip not only permits deep draws, but fast draw speeds as well, which is particularly desirable for repetition press work or other operations where parts are produced in large quantities. This means relatively low power consumption.

Revere Brass Strip does not foul dies quickly, requiring only a minimum of die re-dressing. And one of its most desirable features

is that it plates well and polishes easily, requiring only a minimum of finishing.

Revere Brass Strip in its various alloys is still another example of how, by fitting the metal to the job, it is possible to produce superior products at the lowest possible cost.

Practically every industry you can name is able to cite similar instances. So we suggest that no matter what your suppliers ship you, it would be a good idea to take them into your confidence and see if you cannot make a better product at lower costs by specifying exactly the *right* materials.



**REVERE COPPER AND BRASS INCORPORATED**

Founded by Paul Revere in 1801

Executive Offices: 230 Park Avenue, New York 17, N. Y.

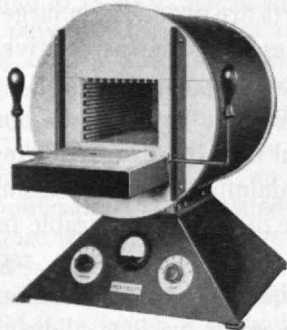


# HEVI-DUTY

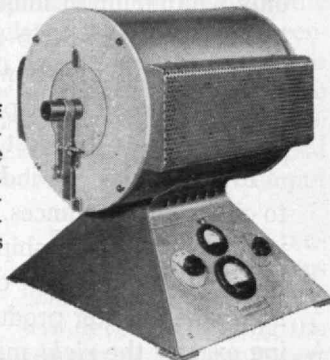
## IN STEP with tomorrow's stepped-up DEMANDS

### LABORATORY FURNACES

**COMBUSTION TUBE FURNACE** — Hinged tube furnaces are available in various sizes with temperature ranges to 1800°F or 2200°F.



**MUFFLE FURNACE** — "Multiple-Unit" Muffle furnaces have a maximum temperature of 1850°F. Temperature indicating and controlling devices are located in the pyramid base for full protection and visibility.



**HIGH TEMPERATURE TUBE FURNACE** — Temperatures to 2600°F. can be reached in this furnace. Other Hevi-Duty laboratory furnaces have maximum temperatures as high as 3000°F.

## HEVI-DUTY ELECTRIC COMPANY

MILWAUKEE 1, WISCONSIN

Harold E. Koch, '22, President  
Elton E. Staples, '26, Vice President  
Chester Meyer, '36, Assistant Secretary

## TALK OF OUR TIMES

### The Chemists and World Security

*How can chemists and chemical engineers contribute to the establishment of a viable world for mankind? Walter G. Whitman, '17, Head of the Department of Chemical Engineering, took up this question at a meeting of the American Chemical Society in Boston last month. Professor Whitman said in part:*

■ The introduction of this thesis is a series of four premises which are unpalatable but, I believe, rather inescapable:

1. Man's power to destroy has so multiplied that another major war would eliminate modern civilization.
2. The only safeguard against such destruction which the peoples of the powerful nations now recognize is an ability to retaliate in kind. This "balance of terror" is inherently unstable.
3. The atomic monopoly of today — held by the United States, the Soviets, and Britain — will soon be broken. It is logical to expect that 15 nations will have the bomb within a dozen years if governments regard it as a No. 1 priority objective.
4. The world will become still more unstable as this occurs. Atomic weapons are well suited to the purposes of the blackmailer and of the desperate dictator.

This prospective degeneration of world security challenges each of us to study the causes of our predicament and to search for constructive actions which might turn the scales. . . .

The opportunities which are unique to us as professional people lie in the area of human relationships with individual chemists and chemical engineers of the Eastern nations. Some of you have such personal relationships. I have been especially privileged because of my United Nations work in the preparation and operation of the first Atoms-for-Peace Conference at Geneva in 1955. . . . If the pathway to direct communication seems thorny today, we can gather encouragement by remembering that only four years ago the Iron Curtain was an impregnable barrier, patrolled by both sides. . . .

Why do we chemists and chemical engineers have special responsibilities to develop personal understandings with people of the Soviet Union? We are perhaps no better nor any wiser than other citizens. However, the nature of our skills is such that both governments believe that it is in their interests to allow some personal contact. Importantly, we are members of a profession in which the individual can fairly anticipate that a fellow professional, regardless of nationality, will greet him with respect and an open hand.

The effectiveness of such contacts is of course a very personal matter with the participants, as in all human relations. Suspicion or cynicism, even if one attempts to conceal it, will elicit similar attitudes. The early introduction of political topics will almost certainly be disastrous — each party will be impelled to defend his system and to attack the others. An attitude of frankness with the other man — of a sincere interest in learning from him — is the sound approach.

(Concluded on page 364)

# COMMAND DESTRICT

The flight testing of second generation missiles—more versatile and powerful than their predecessors—requires a device for sure termination of any missile flight that might endanger the test range or surrounding area.

Ramo-Wooldridge engineers, under a United States Army Signal Corps contract, have successfully developed and delivered the first sub-miniature, completely transistorized radio "command destruct" receivers.

Specifically designed for missile flight safety operations, the receiver (AN/DRW-11) can actuate safety mechanisms or destruct devices. It has three command channels, each of which actuates a control relay.

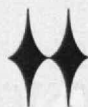
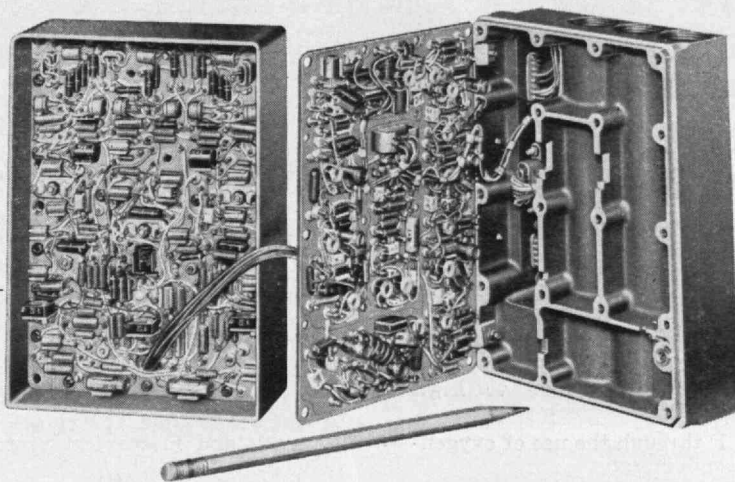
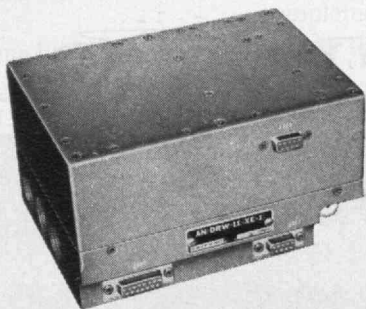
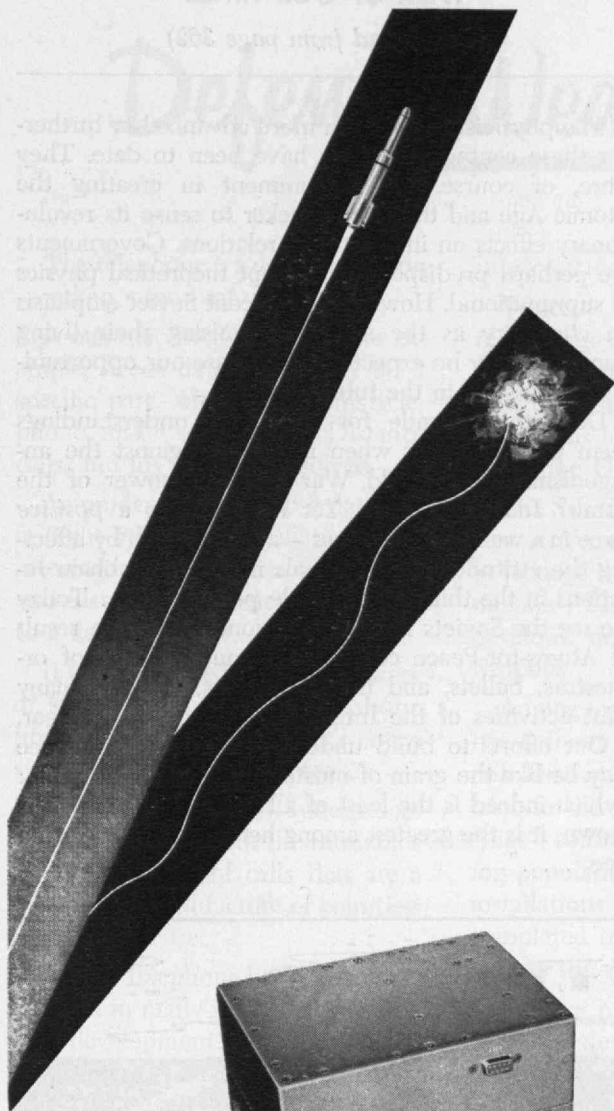
The "command destruct" receiver accepts frequency modulated signals in the UHF radio command control band. It is designed to operate with closer radio frequency and command frequency channel spacing than has been used to date, thus making possible more efficient use of the available radio spectrum.

Compact and rugged, the radio receiver's modular construction permits rapid and complete accessibility to all components. One module houses the basic receiver. The second module contains the three command channels and relays. This integrated package occupies 115 cubic inches, and weighs 4 pounds. The receiver requires no pressurization and operates reliably under the adverse environmental conditions encountered in missile flight testing.

Engineers and scientists interested in being associated with some of the nation's most advanced research and development programs are invited to acquaint themselves with current opportunities at Ramo-Wooldridge. The areas of activity listed below are those in which R-W is now engaged and in which openings exist.

- Missile electronics systems
- Advanced radio and wireline communications
- Information processing systems
- Electronic language translation
- Anti-submarine warfare
- Air navigation and traffic control
- Analog and digital computers
- Infrared systems
- Electronic reconnaissance and countermeasures
- Basic and applied physical research

For a copy of our brochure, *An Introduction to Ramo-Wooldridge*, or other additional information write to Mr. Donald L. Pyke.



## RAMO-WOOLDRIDGE

P. O. BOX 90534, AIRPORT STATION • LOS ANGELES 45, CALIFORNIA  
a division of **Thompson Ramo Wooldridge Inc.**





**ASK THE  
AEROFIN MAN**  
for the practical solution  
to your problem of  
**HEAT EXCHANGE**  
in heating, cooling,  
air conditioning or process

**AEROFIN CORPORATION**  
101 Greenway Ave., Syracuse 3, N. Y.  
Pioneers in Light-Weight, Extended Surface

## TALK OF OUR TIMES

(Concluded from page 362)

The physicists have been more advanced in furthering these contacts than we have been to date. They were, of course, more prominent in creating the Atomic Age and therefore quicker to sense its revolutionary effects on international relations. Governments are perhaps predisposed to accept theoretical physics as supranational. However, the recent Soviet emphasis on chemistry as the means for raising their living standards may be expected to increase our opportunities for contact in the future.

Does this crusade for individual understandings seem pitifully weak when measured against the antagonisms of the Cold War and the power of the bomb? Indeed, it does. Yet it represents a *positive* force in a welter of negatives — a force which by affecting the attitudes of individuals may initiate chain reactions in the thinking of whole peoples. . . . Today we see the Soviets in a more rational light as a result of Atoms-for-Peace conferences, mutual visits of orchestras, ballets, and theater groups, and the many joint activities of the International Geophysical Year.

Our efforts to build understanding and confidence may be like the grain of mustard seed in the parable: "which indeed is the least of all seeds: but when it is grown, it is the greatest among herbs, and becometh a tree. . . ."



**NEW HORIZONS...**  
**AND HIGHER ALTITUDES**  
**IN HIGH TEMPERATURE WIRE**  
**1000° F 300 VOLT 600 VOLT**

**BIW SUPER JET  
INORGANIC INSULATION**

solves many problems due to the constantly rising temperature requirements of missiles. While the inorganic insulation is fibrous in form it is however protected to some degree from the absorption of moisture under humid conditions. Decomposition due to heat aging leaves no deleterious carbon deposit. Flexibility — these cables can be bent or twisted without damage following exposure to high temperature.

Cables withstand 1000° F through the use of oxygen-free nickel-clad copper conductors.

Where abrasion is a factor, BIW 1000° F cables may be shielded with stainless steel or nickel-clad copper braid.

send for information.

**1000° F FLEXIBLE INSTRUMENT WIRE**  
Small diameter light weight cables. Voltages are usually not over 120 volts AC and the cables are rated at 300 volts.

	OD		OD
#24 gauge	0.100"	#20 gauge shielded	0.135"
#24 gauge shielded	0.125"	#16 gauge	0.135"
#20 gauge	0.110"	#16 gauge shielded	0.160"

**1000° F FLEXIBLE POWER CABLES**  
Ample insulation provides additional dielectric strength and mechanical protection. Voltage rated at 600 AC.

	OD		OD
#20 gauge	0.150"	#16 gauge shielded	0.185"
#20 gauge shielded	0.175"	#12 gauge	0.200"
#16 gauge	0.160"	#12 gauge shielded	0.225"

**BOSTON INSULATED WIRE AND CABLE CO., BOSTON 25, MASS.**

# Defense Weapon

The telephone is a defense weapon—and an important one.

A manufacturer of rockets, for example, needs data or delivery on a specific part. He picks up his telephone, makes several Long Distance calls, and his problem is solved.

An unidentified aircraft is detected in flight by a radar installation. The information is relayed automatically and instantly over telephone cables to a defense center.

It is then flashed over the network of special Bell System telephone lines which link the country's entire system of continental defense.

The role of the Bell System does not stop there or with the thousands upon thousands of calls that are a part of the manufacture of countless items of defense.

Its Bell Telephone Laboratories are engaged in many important research and development projects for the government. These include the Nike Zeus anti-missile missile system and the guidance system for the Titan

intercontinental ballistic missile.

Western Electric, the Bell System's manufacturing and supply unit, is producing the guidance and control equipment which is the heart and brains of the mighty Nike Ajax and Nike Hercules missile systems.

The Sandia Corporation, a subsidiary of Western Electric, continues to manage the Atomic Energy Commission's Sandia Laboratory, which develops, designs and tests atomic weapons.

Among many other Western Electric defense projects were the 3000-mile Distant Early Warning (DEW) Line in the Arctic and the "White Alice" communication system linking population centers and military installations in Alaska. Both were completed on schedule and turned over to the Air Force.

Another project for the Air Force was the design, production and supervision of installation of a communications system for a guided missile test range extending out to sea.

The backbone of this system is the special underseas cable that stretches 1370 nautical miles from Cape Canaveral in Florida to Puerto Rico. It provides an instant, secret, weather-proof means of transmitting data on missiles in flight.

Radar installations along the way spot the missile's flight position which is flashed continuously to the testing base by cable. So are signals from the missile itself.

Recently the U.S. Air Force asked us to add the communications phases of a ballistic missile early warning system to the other military projects handled by the Bell System.

The Bell System is primarily engaged in providing telephone service. But it gives top priority and its utmost effort to the needs of Government whenever it is called upon for work for which it is specially fitted by size and experience.

Particularly when it comes to protecting the country, it's good to use the best scientific knowledge available in the communications field.



**BELL  
TELEPHONE  
SYSTEM**





## TREND OF AFFAIRS

(Continued from page 348)

### Helping Students Arrange Trips

■ For about a year now, a large map of the United States has hung on a wall in the office of the M.I.T. Dean of Residence. This map has 60 pegs on it, placed strategically at various points across the United States, north into Canada, and south into Mexico. Any hopeful automobile rider willing to share trip expenses simply leaves a note on the peg nearest his desired destination. On the note he states his preferred times of departure and return, his precise destination, and, of course, his campus address. The next move is up to drivers who want riders. They either check the map occasionally or leave notes of their own. In this convenient fashion, as many as 200 people have been accommodated during various vacation periods. The service is supervised during the academic year by a member of Alpha Phi Omega, an unusual group itself.

The M.I.T. chapter of Alpha Phi Omega was founded in 1936, disbanded during the war years, and reorganized in 1948. All of its members have, at one time or another, been affiliated with the Boy Scouts. Presently the group consists of about 70 students. Among projects that they have worked on are an undergraduate telephone directory, a career book for seniors, a swimming instruction course for Cambridge scouts, and a charities carnival.

## More Sloan Fellows

■ Forty-five young men, the largest number in the history of the Sloan Fellowship Executive Development Program, will come to the M.I.T. School of Industrial Management next month. These men were nominated for fellowships by their employers, and will spend a year at the Institute studying fundamentals that underlie sound management decisions. Sloan Fellowships rank among the highest honors that can come to a young business executive.

Companies represented by this group include the Aerojet-General Corp., Allis-Chalmers Manufacturing Co., American Gas and Electric Service Corp., American Smelting and Refining Co., American Telephone and Telegraph Co., Atchison, Topeka and Santa Fe Railway Co., Avien, Inc., Binod Mills Co., Ltd., Campbell Soup Co., Central Illinois Public Service Co., Chrysler Corp., Columbia Broadcasting System, Continental Oil Co., Darin and Armstrong, Inc., Delta Steel Mill, Eastman Kodak Co., General Dynamics Corp., General Motors Corp., Hughes Aircraft Co., International Business Machines Corp., International Telephone and Telegraph Corp., Kennecott Copper Corp., Lever Brothers Co., Midland-Ross Corp., Radio Corporation of America, Seabrook Transmission Co., Singer Manufacturing Co., Southwestern Electric Power Co., Sun Oil Co., United Aircraft Corp., United Shoe Machinery Corp., United States Steel Corp., Wagner Castings Co., and Westinghouse Electric Corp., plus the United States Air Force and Navy.

(Continued on page 368)



### lightweight, comfortable and most practical OUR 'WASH AND WEAR' CLOTHING

We have an excellent selection of Summer suits and sportwear, made of blended cotton and Dacron\* or Orlon,\* that are lightweight, crease-resistant, and require little or no pressing. In our own exclusive styles. Catalogue upon request.

\*Du Pont's fiber

111 BROADWAY  
NEW YORK 6, N. Y.

46 NEWBURY, COR. BERKELEY  
BOSTON 16, MASS.

74 EAST MADISON STREET  
CHICAGO 2, ILL.

727 WEST SEVENTH ST.  
LOS ANGELES 17, CALIF.

165 POST STREET  
SAN FRANCISCO 8, CALIF.

ESTABLISHED 1818

*Brooks Brothers,*  
**CLOTHING**  
**Men's Furnishings, Hats & Shoes**

346 MADISON AVENUE, COR. 44TH ST., NEW YORK 17, N. Y.  
BOSTON • CHICAGO • LOS ANGELES • SAN FRANCISCO



## IS IT TIME TO CHECK YOUR WILL?

When you are active you may give little thought to your will. But in reality that's just the time when this major personal responsibility should have your careful attention. Perhaps you are interested in a successful business, in real estate or other investments. Rather than place upon your family the burden of administering such matters, would it not be sound judgment, while you are still active, to consult your lawyer about your will and select an experienced executor who will manage your estate?

Second Bank-State Street, as the executor and trustee, would bring to your affairs many ad-

vantages of vital importance to your beneficiaries. Among these are: the experience accumulated through handling many estates; the personal interest and helpful cooperation of a trained staff; financial responsibility, continuing existence, and the unbiased judgment of a Trust Committee composed of senior executives and members of our Board of Directors especially chosen for their knowledge of investment and trust matters.

*Many have found our booklet "Will Making — the Chart of an Estate" helpful in planning the disposition of their estates. A copy will be mailed on request, without obligation.*

*Whatever your banking or trust needs,  
you're welcome at*

**SECOND BANK - STATE STREET**  
**Trust Company**



**PERSONAL TRUST  
DEPARTMENT**

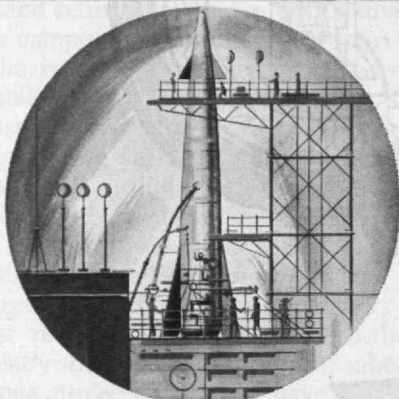
53 STATE STREET  
Boston, Massachusetts

Member Federal Reserve System • Member Federal Deposit Insurance Corporation



# Atchley SERVOVALVES

**FIRST IN  
RELIABILITY**



**MODEL 415**

The Model 415 flow rate is 10 GPM for 1000 psi drop across the valve. Because of unique jet construction, particles as large as 200 microns can be passed through both the first and second stages without malfunctioning.

**Other features include:**

Single source of oil in first stage eliminates possibility of unbalance or "hardover" signals due to oil contamination.

Second stage precisely controlled by a push-pull, frictionless, force feedback servo.

Other models available in four sizes with flows from 1/2 to 50 GPM.

For more information, write for Data File TR-644-2.

**Raymond Atchley, Inc.**

2340 SAWTELLE BOULEVARD  
LOS ANGELES 64, CALIFORNIA  
TELEPHONE • GRANITE 9-8626

## TREND OF AFFAIRS

(Continued from page 366)

### 50,000 Strong

■ Its annual census, taken as of March 31, disclosed a total of 63,596 names on the membership rolls of the Alumni Association: 50,023, or 78.7 per cent, being carried in living status, and 13,573, or 21.3 per cent, as deceased.

Four per cent of the living Alumni — that is, a total of 2,011 — were 50 or more years out of the Institute; 23 per cent were 31 to 50 years out; 41 per cent were 11 to 30 years out; and the remaining 32 per cent were out 10 years or less.

The *eldest fifth* of the living alumni body — that is, the group of 10,005 longest out of the Institute — included members of all classes from 1881 through 1923, plus 70 per cent of 1924. The *eldest quarter* further included the rest of 1924, all of 1925, and all but 30 per cent of 1926.

The *median point* of the 50,023 living Alumni fell nine-tenths of the way down the roster of the Class of 1942.

Four-fifths of the Class of 1951 down through 1958 composed the *youngest quarter*; and two-thirds of 1952 down through 1959 made up the *youngest fifth*.

### A New Medical Research Program

■ A training program for clinical scientists in cardiovascular and pulmonary research was announced last month by M.I.T. and the New England Center Hospital. Two trainees will be admitted to this program each year for the next three years. They will take a prescribed series of courses in advanced mathematics, physical chemistry, instrumentation, and other applicable subjects at M.I.T. for one year, then do more graduate work at the Institute during the next two years while engaged in special postgraduate studies and work at the hospital.

Irwin W. Sizer, Head of the Department of Biology, regards the program as an excellent example of the type of contribution M.I.T. can make to medicine at the postgraduate level, and hopes this kind of program will continue and expand. The National Heart Institute of the National Institutes of Health has made a \$146,000 grant for this program.

(Continued on page 370)

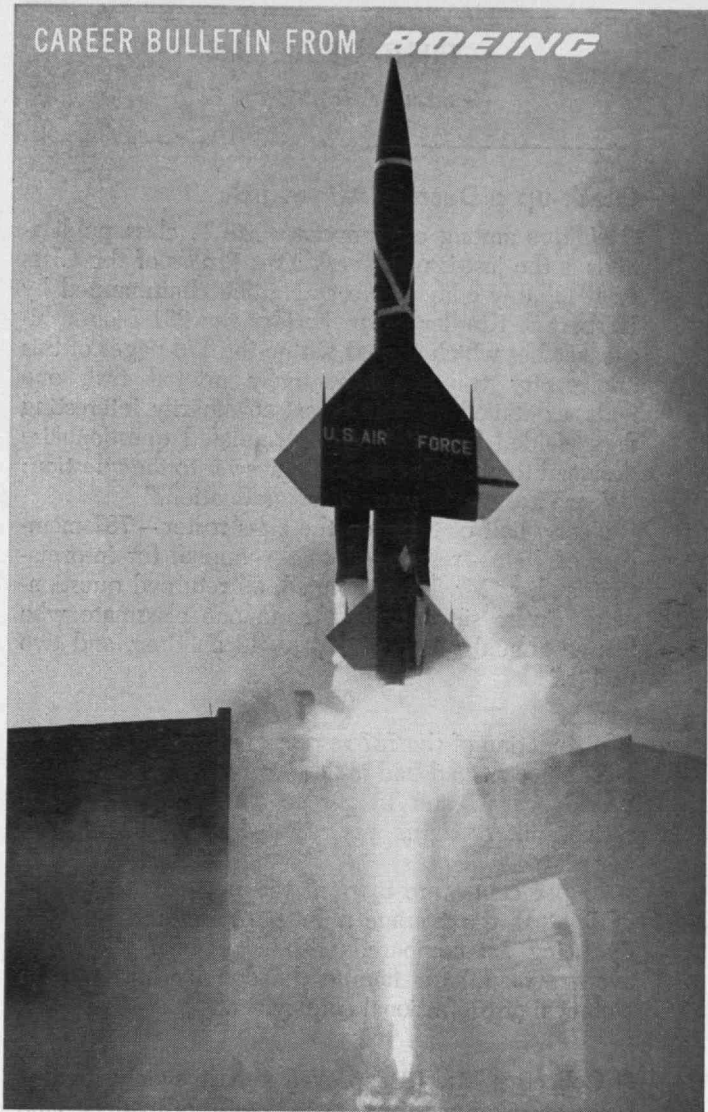
## William H. Coburn & Co.

INVESTMENT COUNSEL

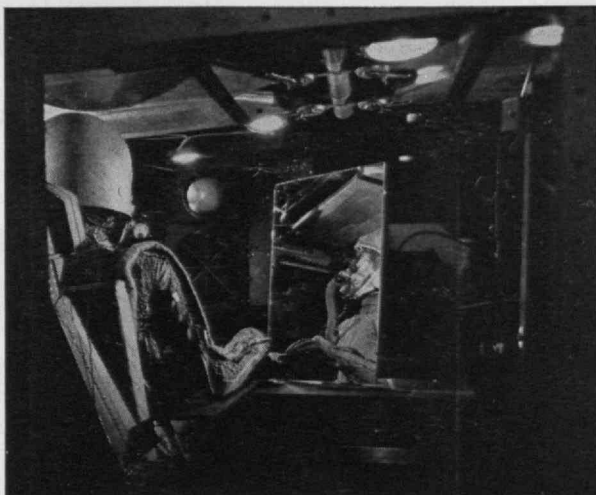
68 Devonshire Street

Boston

# CAREER BULLETIN FROM **BOEING**



**BLAST-OFF** of supersonic Boeing BOMARC, the nation's longest-range defense missile. Now in volume production for Air Force bases under construction. Other Boeing missile projects that offer engineers and scientists outstanding career opportunities include Minuteman, an advanced solid-propellant intercontinental ballistic missile system.



**SPACE-AGE** projects are expanding at Boeing. Above is human factors laboratory in which problems of providing environments and controls for space vehicle crews are investigated. Celestial mechanics, lunar orbital systems and interplanetary systems are other areas that offer long-range space-age career opportunities to qualified engineers and scientists.



**BOEING 707**, first American jetliner to enter commercial service, typifies years-ahead Boeing engineering concepts that are literally opening up new eras in both military and civil aviation. Opportunities that can help you get ahead faster are available *now* in Research, Design, Production, Service.



**SAILBOATS** on Lake Washington in Seattle, boating capital of the U.S. Boeing headquarters are located in evergreen Puget Sound area, world famous for fresh and salt water boating, fishing, hunting, camping, scenic forests, dramatic snow-capped mountains, mild year-round climate. Wonderful Western living for the whole family!



Write today, for your free copy of 24-page booklet, "Environment for Dynamic Career Growth." It pictures the career areas and advantages that could assure you a brighter future.

Mr. Stanley M. Little,  
Boeing Airplane Company,  
P. O. Box 3822 - UMT, Seattle 24, Washington.

Send me the Boeing career booklet by return mail.

Name .....

Address ..... City ..... State .....

Degree(s) ..... Field of interest .....

Experience .....

**BOEING**



# ENGINEERS PHYSICISTS MATHEMATICIANS

Investigate the outstanding promotion opportunities at Douglas.

It stands to reason that the biggest field for advancement lies where the biggest programs involving advanced technology are under way.

At Douglas, massive missile, space and transport projects in both military and commercial areas have created a continuous demand for engineers and scientists with backgrounds *outside* as well as in the avionics, aircraft and missile fields.

As these projects grow in scope, the multiplying supervisory and executive openings are filled by Douglas engineers from within the company. This promotion policy has made Douglas a prime organization for the engineer who wishes to advance in his profession.

For further information, write to Mr. C. C. LaVene, Douglas Aircraft Company, Inc., Santa Monica, California. Section N.



the most respected name in aircraft,  
missile and space technology

## TREND OF AFFAIRS

(Continued from page 368)

### Check-up a Decade Afterward

■ Unique among contemporary M.I.T. class publications is the just-issued *Tenth Year Profile* of the Class of 1948, ably edited by a committee chairmanned by Herbert S. Kindler.\* For, besides the 881 biographical sketches which appear within the 173 pages of this anniversary volume's attractively printed text, one finds a detailed analysis of extraordinarily interesting data yielded by a carefully formulated questionnaire designed to obtain a composite answer to the question: "Where are we 10 years after graduation?"

Nearly half of those on the class roster — 787 members of 1948 — responded to the appeal for information; and, as Mr. Kindler noted, all returned questionnaires "were sincere, aside from one classmate who has an annual salary of \$2,000, 13 children, and two yachts."

■ Tabulation of the 787 responses showed that:

— 82 per cent had had military service (73 per cent in World War II and 12 per cent in Korea), but that active military status was retained in 1958 by only 2 per cent;

— 89 per cent were married (58 per cent to college graduates), the average number of children per family being 2.2 compared with a national per-family average of 1.9 for families headed by husbands in technical or professional employment.

■ Collective Mr. 1948 proved almost evenly divided between Conservatives, Middle-of-the-Roaders, and Liberals, and:

— 42 per cent of the Conservatives and Middle-of-the-Roaders "regularly attend church," and 10 per cent "never attend"; while

— 44 per cent of the Liberals "rarely attend," and 24 per cent "never attend."

■ Politically, 51 per cent are Republicans, 15 per cent Democrats, and 24 per cent Independents, *but* as to who should be the next President of the United States:

— 26 per cent preferred a Democrat, and 39 per cent a Republican; while among possible candidates:

— Nixon received 43 per cent of all ballots, Stevenson 15 per cent, Kennedy 13 per cent, Knowland 5 per cent, "all other Republicans 12 per cent and all other Democrats 12 per cent. Five loyal Alumni cast ballots for Dr. Killian."

■ As to the popularity of magazines: 42 per cent read *Time*, 37 per cent read *Life*, and ranging from 19 per cent to 12 per cent the other favorites in descending  
(Continued on page 372)

\* Copies of this book may be obtained at \$5.00 apiece from Herbert S. Kindler, Director of Technical and Educational Services, Instrument Society of America, 313 Sixth Avenue, Pittsburgh, Pa. (Book printed by Isaac Goldmann Division, Publishers Printing—Rogers Kellogg Corporation.)



ACTION SHOT OF DUKE ALL-AMERICAN HALFBACK  
GEORGE CLARK ON ANOTHER FIELD



## When a lawyer wants advice...

George Clark handles the life insurance program of J. V. Morgan (seated at desk, above), partner in a prominent law firm in High Point, North Carolina.

It's not surprising, therefore, that Mr. Morgan conferred with him on the effect that pending federal legislation would have on the integration of insurance with his personal estate. (This legislation would allow a self-employed individual a tax deduction on funds used to set up his personal retirement plan.)

The ability to provide well-informed service on a continuing basis is characteristic of the New England Life agent. And he is closely supported by his general agency and home office with in-

formative reports and expert assistance in various technical areas.

If a career like George Clark's appeals to you, investigate the opportunities with New England Life. You get a regular income from the start. You can work anywhere in the U.S.A. Your future is full of substantial rewards.

For more information, write to Vice President L. M. Huppeler, 501 Boylston Street, Boston 17, Massachusetts.

### NEW ENGLAND

*Mutual* **LIFE** Insurance Company  
BOSTON, MASSACHUSETTS

THE COMPANY THAT FOUNDED MUTUAL LIFE INSURANCE IN AMERICA — 1835

These MIT College men are New England Life representatives:

Blaylock Atherton, '24, Nashua

Charles E. Crawford, '31, Phoenix

Herbert L. Neitlich, '49, Boston

Arthur C. Kenison, '19, Boston

Ask one of these competent men to tell you about the advantages of insuring in the New England Life.



## ENGINEERS and SCIENTISTS

at Convair-Astronautics pursue space projects at a most advanced state of the art, requiring the highest degree of professional skill. Keystone of these many programs is the mighty

### ATLAS ICBM

In this young missile age, Atlas already lists many unique achievements. A proven weapon, it is our only large, tested booster and the only known vehicle to steer itself into orbit. It will lift the first manned capsule into space, and most exploration programs of the future include Atlas in their planning.

### PROJECT CENTAUR

... design, construction and testing of a high energy, upper stage rocket ... is the newest Convair-Astronautics program released. Boosted by Atlas, Centaur will be able to place in orbit a satellite weighing several thousand pounds.

Positions are available now in design (electrical, electronic, mechanical, structural), systems design & analysis, propulsion, test laboratories, field test, engineering writing, computer programming, research engineering, and other specialties.

### INTERVIEWS

are regularly conducted throughout the U.S. by our engineering representatives. So that advance interview arrangements may be made, please send your resume at once to Mr. G. N. McMillan, Engineering Personnel Administrator, Dept. 130-90

### CONVAIR ASTRONAUTICS

Convair Division of

### GENERAL DYNAMICS

5578 Kearny Villa Road,  
San Diego, California



## TREND OF AFFAIRS

(Continued from page 370)

order were *Business Week*, *Scientific American*, *Fortune*, *Reader's Digest*, *New Yorker*, *Saturday Evening Post*, and *Newsweek*.

#### ■ Comparing the U.S.S.R. and the U.S.A.:

- 45 per cent believed the Russians "superior" in technical education, and 33 per cent in weapons development;
- 33 per cent believed the Russians "inferior" in basic scientific achievement, and 84 per cent in "applied science for peaceful purposes";
- 45 per cent believed the two countries "about equal" in technical education, and 57 per cent "about equal" in weapons development and in basic scientific achievement.

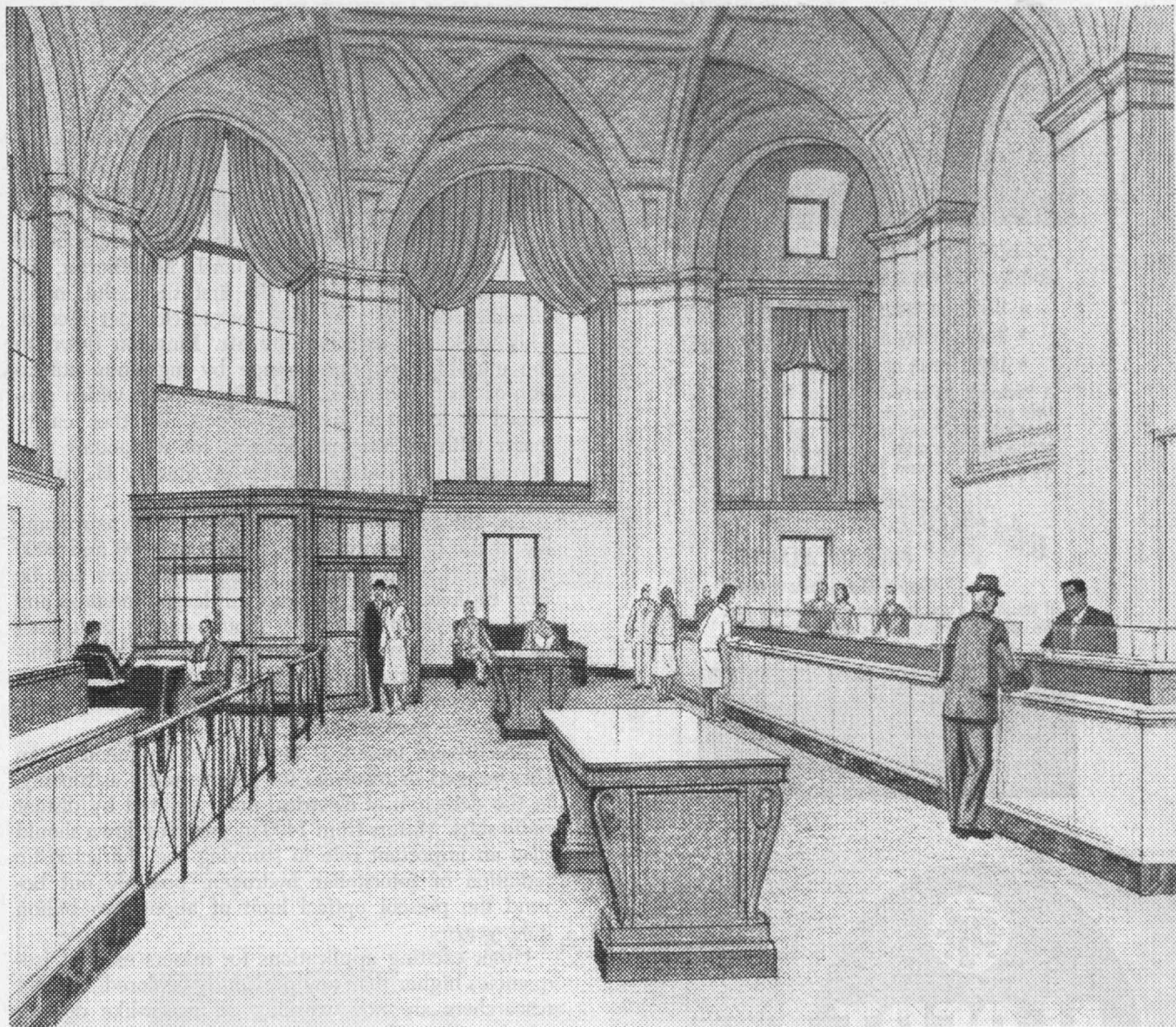
■ Upon graduation, 84 per cent received gross annual salaries of \$2,500-\$3,000; and 10 years later the annual income "from primary vocations" averaged \$10,600, its median being \$10,000. "Vocational demands [required] overnight travel averaging 2.5 nights per month," but 27 per cent had to be "out-of-town only one night a month." Further data as to finances and scale of living included:

- 60 per cent own common stocks, and all but 2 per cent carry insurance;
- Three of every five have invested in houses, and 62 per cent have taken the precaution of preparing a will;
- 99 per cent own an auto, about 25 per cent own two, and 1 per cent own three; one man reported the ownership of an airplane;
- 54 per cent were opposed to credit buying except for the purchase of a house or car;
- 35 per cent employ domestic help, and 11 per cent have such help more than twice a week;
- 52 per cent expect continued inflation, and 20 per cent expect a "stable economy at higher levels";
- Assuming no inflationary trend, the incomes anticipated 25 years after graduation, in 1973, averaged \$20,500, with a median of \$17,000.

■ As to M.I.T. in "retrospect," over half retained the impression that the freshman year was the "hardest," and over 70 per cent that the senior year was the "most enjoyable." "In overwhelming numbers the Class of '48," as Mr. Kindler summarized, "believes the curricula in mathematics, science, and engineering is adequate ... on the other hand, [only] 54 per cent were satisfied with the humanities curricula ... almost two-thirds considered scholarship aids adequate ... opportunity for personal faculty contact could be improved, replied 86 per cent of the Class ... 59 per cent wanted more faculty guidance in curricula selection ... two-thirds felt they had had adequate time for extra-curricular and social affairs." And finally:

- 86 per cent responded that "if they had it to do over again [they] would return to M.I.T."

(Concluded on page 382)



## AN INVITATION

This is the new main banking floor of The New England Trust Company — completely remodeled and air conditioned to offer our customers more pleasant and efficient banking facilities. Other changes — in the Trust Department, in the Safe Deposit Vaults, and in working areas are equally extensive. You will like doing business in these modern, quiet offices. And they provide our staff with more comfortable, better arranged space to give you better service.

You are cordially invited to stop in and see us.

## The New England Trust Company

135 DEVONSHIRE STREET, BOSTON 7, MASS.

Telephone: HAncock 6-8005

Back Bay Branch: 99 Newbury Street

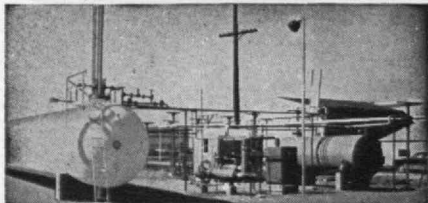
*Member of the  
Federal Deposit  
Insurance Corporation*



Incorporated 1869



## GAS STANDBY



Packaged 12 mcfh plant designed and built by Draketown for ...

- ★ Utility or Industrial standby
- ★ Peak shaving and augmentation
- ★ 100% Town or plant supply

A Packaged Draketown Propane Plant will help you reduce demand charges; provide a supply of gas during curtailment periods... at the turn of a valve... or supply that outlying section or plant 100% if desired.



"Good Gas Insurance"

If you have a gas problem, we can help you. We operate from coast to coast and overseas. Phone or write today — no obligation.

**DRAKE & TOWNSEND**

INCORPORATED

Consulting • Design • Engineering • Construction

11 WEST 42ND STREET • NEW YORK 36, N. Y.

## REMARKABLE "MASER" STORY

(Concluded from page 360)

which has been under way at Lincoln for several years. Swift implementation of the solid-state maser proposal was made possible by fundamental research on paramagnetic resonance conducted by James W. Meyer, and by the equally essential contributions of the materials group, in synthesizing large single crystals of accurately prescribed composition. Investigation of several suitable materials led Alan L. McWhorter, '55, and Mr. Meyer to obtain the first successful maser amplifier operation at 2800 megacycles per second. This work was extended by Mr. Kingston down to the ultra-high-frequency range by ingenious utilization of a super-conducting lead wire loop which produced a low-loss coupling circuit. Another cavity maser with exciting possibilities for astronomy was developed at 1400 megacycles by Stanley H. Autler and N. McAvoy.


The future potential of masers in radar astronomy lies at the higher frequencies, such as 2800 and 9000 megacycles, where the low-noise capabilities can be fully exploited. Coupled with still larger antennas and more powerful radars, they should enable us to contact more distant planets, to get more detailed information about the surface properties and rotation of Venus, and to track satellites, missiles, and space vehicles at greater ranges.

Broad-band masers at these higher frequencies can also be used in receivers for passive radio astronomy, in the detection of electrical noise emitted by distant radio stars. Masers from 1400 megacycles down should play an important role in studying the characteristic radiation of interstellar hydrogen, possibly out beyond the present optical limit of about two billion light years.

Other exciting applications for masers exist at frequencies higher than any previously explored. Lincoln researchers are now working on maser-like devices which will reach into the millimeter, sub-millimeter and even infrared range, to provide energy sources and detectors far superior to those now available. One of the inventors of the original gas maser, Herbert J. Zeiger, now at Lincoln, is engaged in work on infrared frequencies, and research in millimeter waves is actively in progress under the direction of Gerald S. Heller.

One objective of the Lincoln program is to extend the boundaries of knowledge by fundamental research on the properties of matter. Another is to develop and exploit as expeditiously as possible research results of potential practical value. The rapid development of the ultra-high-frequency maser system, used in the Venus experiment, emphasizes the value of the fundamental research program as a reservoir of talents and techniques.

*The Review erred in reporting the Venus experiment in its April issue. The report stated that when emitted the signals were 10,000,000 or more times as strong as when received. Echoes from the moon were 10,000,000 times as strong as those from Venus. The strength of the signals directed at Venus was about a million 'million million times that of those received back.*



ALUMINUM  
PLASTIC  
STEEL  
WROUGHT-IRON  
CEMENT-ASBESTOS  
LIGHTWEIGHT  
**SPEED-LAY<sup>®</sup>**  
PIPE SYSTEM  
FREE BROCHURE

**ALBERT**

PIPE  
VALVES  
FITTINGS

PIPE PILING  
& ACCESSORIES

•

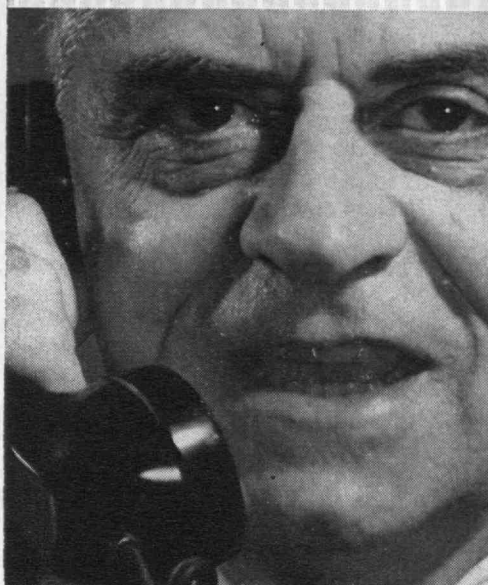
PIPE  
FABRICATION

**ALBERT**

PIPE SUPPLY CO., INC.

101 VARICK AVENUE  
BROOKLYN 37, N. Y.  
tel: HYACINTH 7-4900

S.G. ALBERT '29  
A.E. ALBERT '56



Need fast delivery  
of corrugated boxes?

**Call**

your H & D  
Packaging Engineer



**Hinde & Dauch**

Division, West Virginia Pulp and Paper

Sandusky, Ohio  
15 Factories • 42 Sales Offices

## SPECIAL REPORT



Mr. RULON E. RASMUSSEN NEW YORK LIFE AGENT

at PHOENIX, ARIZONA, GENERAL OFFICE

**BORN:** April 7, 1923

**EDUCATION:** University of Utah, George Washington University, Business and Law Schools.

**PREVIOUS EMPLOYMENT:** Member of U.S. Senator Elbert Thomas' staff. Staff member Senate Education & Labor, and Military Affairs Committees, 1943-1947.

**REMARKS:** One key factor in Rulon Rasmussen's successful transition from legislative fact-finding to life insurance selling was his fine business and law school background. This background and his congenial personality have helped Rulon top the million-dollar sales mark every year since 1949, the year after he became a New York Life representative. Today he is a Qualifying and Life member of the insurance profession's Million Dollar Round Table and has earned membership in the Company's Presidents Council—an honorary organization of New York Life's leading agents. If past experience is any indication, the years ahead look bright indeed for New York Life representative Rulon E. Rasmussen.

**Note**

Rulon Rasmussen, like so many other college alumni, is well established in a career as a New York Life representative. It offers him security, substantial income and the deep satisfaction of helping others. If you or someone you know would

like more information on such a career with one of the world's leading life insurance companies, write:

**NEW YORK LIFE INSURANCE COMPANY**  
College Relations, Dept. P-26  
51 Madison Avenue, New York 10, N. Y.





## SUCCESSFUL Plant Manager

gets rid of his electrical plant maintenance problems and the high hourly cost of shut-downs. He also puts complete responsibility for electrical construction work in the hands of

### A. J. WOLFE COMPANY

2 Harris Avenue, Jamaica Plain  
(Boston) 30, Massachusetts

Call Jamaica 4-1222 . . . Our 35th Year



## GEARS

**Made to Your  
Specifications**

You and we can form a team—you to draw up the specifications; we to make the gears—that will be profitable to both of us. Gears of all types, all sizes, all materials. Design-engineering service available.

Custom Gears  
Exclusively

**DIEFENDORF GEAR  
CORPORATION**

Syracuse 1, N. Y.

# DIEFENDORF

## GEARS

## CONTRASTS IN RUSSIA

(Concluded from page 359)

outside window displays of high heels and other unobtainable articles. Despite the propaganda about the joys of the workers' paradise, there is an air of sad and patient resignation everywhere. It is appalling to think of nearly 8,000,000 Moscow workers crowded into broken and sagging log houses, or the endless tiers of dirty gray and ugly yellow-ocher tenements, whole families to a room, using community kitchens and bathrooms, without privacy, quiet, or dignity. Everywhere are forests of radio and TV antennas, allowed in this austere economy not so much for entertainment as for propaganda and indoctrination.

There is now some free choice of jobs — not much of a privilege since the state controls where everyone lives by assigning living spaces. What is not allowed is to be idle. Everyone works who is able-bodied and not in school. Women and girls, besides taking their places in medicine, engineering, and the physical sciences, labor in shapeless dresses beside men in the factories and on construction jobs, lugging bricks, driving trucks or cranes, and digging in the ground.

The labor force is as carefully designed as everything else in this determined land. Workers are regimented and indoctrinated from infancy, and raised in an educational system tailored to the production of workers, like machine parts. The able ones become engineers and managers; the others, manual workers. The 30,000 engineering and science students at the magnificent Moscow State University are paid salaries while fitting themselves for their places in the production field. A member of a Science Service Jury of Soviet schooling reported, "The System as a whole is a very effective tool to achieve economic progress . . ."

But education does not end there! Newspapers and magazines remind the people incessantly of high production in the factories, the mileage of railways newly electrified, the size of Russian sputniks, and the glory of Russian achievement. Persuasion and incentive systems are everywhere. Factory workers are acclaimed and honored, and paid bonuses for exceeding production norms — and penalized for faulty work. Radios, posters, and newspapers din incessantly into everyone's mind, "Work — work — work!" "Work to survive!" "Work to beat America!"

I learned in a remarkable series of confidences that we are loved and admired by many of the people, despite their severe mental disciplining. I was implored to tell the American people not to become softened by our luxury — to keep vital and strong to resist the awful forces that have made labor-slaves and work-units of the Soviet people.

With these fervent expressions in mind, I now look about me to see wasteful uses everywhere of our resources, such as the feeding of our needlessly heavy automobiles. I see the makers of consumer articles planning their premature obsolescence by playing up style changes and prestige factors. I see the American economy tolerating rules throughout industry restricting the productivity of workers. We are a shockingly prodigal people!

In the face of the war that is, I wonder if we can much longer afford our extravagances. I think not!

## New Books from the Technology Press

### Noise in Electron Devices

edited by Louis D. Smullin and Hermann A. Haus

A discussion stressing the mathematical theory and basic physical phenomena of noise in electron devices. The book is a comparison of the various treatments of noise. Problems of noise due to thermionic emission, the general circuit aspect of noise in microwave tubes, and some of the detailed engineering solutions to the problems encountered in the design of low-noise traveling-wave tubes and space-charge control tubes are considered by specialists drawn from both industrial and academic fields. \$12.00

### History of the Gear-Cutting Machine

by Robert S. Woodbury

The first book to appear in a series of monographs on the history of technology, to be published by the Technology Press. This first number describes the evolution of gear-cutting mechanisms, emphasizing the effect of the technical development of the machine tool on the development of power, new materials, and production machinery in the Industrial Revolution. \$3.00

### The Scanlon Plan

edited by F. G. Lesieur

This volume is the first book to be written about the Scanlon Plan, a plan designed to improve the productivity of both labor and management and to share the gains equitably. The book includes reports on how the plan is working in a dozen industries and evaluations by experts in industrial relations. \$4.50

Order from the Technology Press  
Cambridge 39, Mass.

**INSTRON**  
offers  
a new  
dimension  
in precision  
materials  
testing

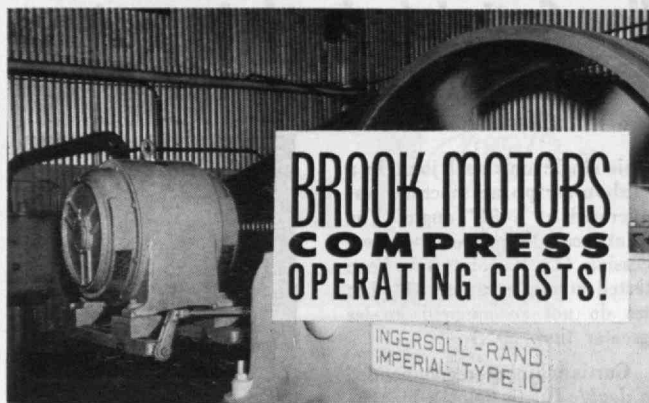


The "new dimension"? It's Instron's capacity to do more . . . and do it more accurately. Here are a few examples:

Instrons today are being used to test materials ranging from acetate to zirconium with electronic precision . . . to study single metal crystals to reveal new facts about the nature of twinning . . . to test high strength steel . . . to examine single fibers of cotton, wool, and human hair . . . to obtain accurate yield points in fine wire . . . to record toughness of paper, using special digitizer and print-out equipment . . . to study memory effects and physical properties of plastics . . . to examine special alloys at high temperatures.

Instron's "new dimension" — its capacity to do more things more accurately — enables R & D programs to move ahead faster, often into areas unapproachable with conventional testing equipment.

**INSTRON**®  
ENGINEERING CORPORATION  
2503 WASHINGTON STREET, CANTON, MASS.  
HAROLD HINDMAN '39 II      GEORGE S. BURR '41 VIII



Users report savings on operating costs when BROOK A.C. MOTORS furnish power for compressors, pumps, conveyors and machinery in factories, mills and mines. Brook Motors require less maintenance. There is no finer motor built, yet they cost less. All standard enclosures, including NEMA Ratings, 1 to 600 H. P. Warehouse stocks, factory representatives and dealers coast-to-coast. Send for literature.

SINCE 1904



world's most respected motor

**BROOK MOTOR CORPORATION**

3302 W. PETERSON AVE., CHICAGO 45, ILLINOIS

In Canada: Brook Electric Motors of Canada, Ltd.  
250 University Ave., Toronto, Ontario  
P. L. Loewe '31, V.P.

## SANGAMO ELECTRIC COMPANY offers you a rewarding career

Sangamo Electric Company is one of the leading manufacturers in the fields of electrical measuring and control equipment, electronic components and military products. Sangamo's constant progress reflects the importance that Sangamo personnel place on the development, manufacturing and marketing of high quality products. These include electric meters, power capacitors, time switches, dynamotors, generators, electronic capacitors, recording instruments and military items. Besides the main plant in Springfield, others are situated at Marion, Illinois, Pickens, South Carolina, and in Canada, England and Scotland.

### SANGAMO IS A GOOD PLACE TO WORK

Find out about your opportunity . . . ask your College Placement Officer, or write directly to Sangamo's Training Director.

These MIT men now hold key positions with Sangamo:

Edward A. Leach, Class of 1927  
Vice-President in Charge of Engineering

Ray Ide, Class of 1930  
Chief Chemist, Pickens Division

Herbert Johnson, Class of 1943  
Chief Engineer

**SANGAMO ELECTRIC COMPANY**

SPRINGFIELD, ILLINOIS, U.S.A.

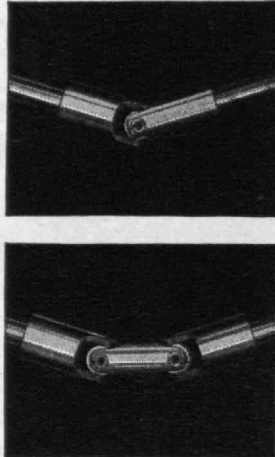


## How Curtis helped a design engineer "BEAT THE HEAT"

This single universal joint in a ribbon-stripping machine was operated at a 34° angle. The joint heated up, wear was excessive. (Curtis Joints have been tested at angles up to 37°, but we do not recommend angles greater than 30°.)

Curtis engineers recommended a *double* Curtis joint, which reduced the angle to 17° per joint. Result: no overheating, improved efficiency, longer life.

You can depend on Curtis engineering in any problem of angular power transmission. And you can depend on



**CURTIS UNIVERSAL JOINTS** because our catalog torque and load ratings are substantiated by constant tests under production conditions.

14 SIZES ALWAYS IN STOCK  
3/8" to 4" O.D.  
(6" joints on special order)

Not sold through distributors. Write direct for free engineering data and price list.

TRADE MARK  
**CURTIS**  
UNIVERSAL JOINT CO., INC.  
8 Birnie Avenue, Springfield, Mass.  
As near to you as your telephone

EXCLUSIVELY A MANUFACTURER OF UNIVERSAL JOINTS SINCE 1919



**NEW VIBRATING CAPACITOR**

A vibrating-reed type capacitance modulator for use in measuring currents as low as  $10^{-16}$  amperes.

Long term stability for process control. Drift  $\pm 0.2$  millivolts per day, non-cum.

Write for Catalog 523.

**STEVENS INCORPORATED ARNOLD**

7 ELKINS STREET  
SOUTH BOSTON 27, MASS.



12-1/4

## GOING TO RUSSIA (Continued from page 359)

The passport will be taken for registration in each city visited thereafter but will usually be returned in a day or less. A guide-interpreter is assigned. Thereafter, the hotel's Intourist Office will be the focal point for all arrangements until the visitor goes to another city and becomes the responsibility of another Intourist Office. The visitor does not select the hotel in any instance.

Generally speaking, Intourist acts as a conveyor belt which follows a prearranged cycle to carry the visitor along in accordance with a predetermined, approved pattern for the individual, his group, or his category. Also generally speaking, the Intourist organization, being charged with responsibility for your visit and your impressions on leaving, will do everything it can for you within the framework of the bureaucracy and the system within which it operates.

**MAIL:** Getting a letter to or from the U.S. by air mail takes about a week. There are mailboxes on the street and in hotel lobbies. Stamps and air mail stickers can be obtained at the hotel postal desk. Neither the flavor nor the amount of glue on the stamps is very satisfactory and the air mail stickers have no glue at all. The usual gluepot with a sponge at the postal desk is best approached with caution. In addressing envelopes and postcards the order usual to us is reversed, for example:

USA — CwA  
Massachusetts  
Cambridge 39  
77 Massachusetts Avenue

The return address is arranged similarly:

CCCP  
Moscow  
Hotel Metropole  
Dr. Henry Jones

**MEAL TICKETS:** Intourist meal coupons are issued in booklets. Each page represents a day's meals and has four sections to be detached for breakfast, dinner, tea, and supper. Each coupon has a definite value in rubles. The value of the de luxe coupons is as follows: breakfast, 14 rubles; dinner, 30 rubles; tea, 4 rubles; supper, 25 rubles. The tourist coupons are worth slightly less than the de luxe. Menu prices are in rubles. You need not use the coupons for the meal for which they are designated. You can use breakfast coupons to pay for supper or dinner, or vice versa.

If you have Soviet hosts, you will doubtless be entertained and be able to accumulate surplus coupons. You can use these for reciprocal entertaining in Intourist restaurants. If, at the end of your visit, you still have coupons left over, you can trade them with the maître d'hôtel of the last hotel in which you stay for caviar, vodka, cigarettes, or chocolate to bring home as souvenirs. The coupons are not redeemable in cash.

**SUBWAY:** The subway in Moscow and Leningrad offers rapid and frequent service. The fare is 50 kopecks (5 cents at tourist exchange) to any point. Tickets can be bought singly or in books of 10. There is no difference in price for tickets bought in books

rather than singly, the inducements being convenience and timesaving. Traffic is very heavy at rush hours and international subway rules seem to apply.

**TAXIS:** Cabs are fairly plentiful and fares are modest. The drivers, as a rule, understand only Russian. In performance of their duties they display the zest internationally characteristic of their profession, with some display of slavish temperament and resentment of an environment where pedestrians overwhelmingly outnumber automobiles. Blowing the horn is not permitted and there are no speed limits. The real fun-loving visitor will particularly relish nocturnal taxi rides, when, in addition to the foregoing conditions, vehicles in the city operate with only parking lights.

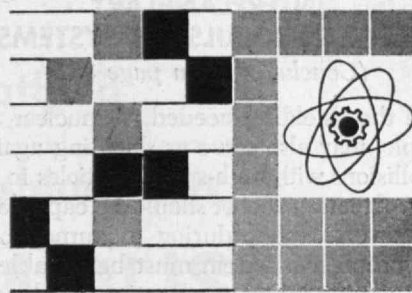
**TELEPHONE:** In principal cities, telephones operate on the dial system, and your hotel room will probably have a phone. Telephone numbers are composed of a letter and five digits: K 7-35-02. The letters on the dial are in the Russian (Cyrillic) alphabet. There will *not* be a telephone book in your room. At the administrator's (manager's) desk there may be a telephone book, but it is not likely to help you since phone numbers seem to be changed rapidly and the phone books are not. "Information" speaks only Russian and its service is neither rapid nor accurate. Be sure to ask, write, and keep the telephone numbers of your Russian hosts and acquaintances.

There are pay phones in stores, restaurants, and other public places, and there are outside phone booths on the streets—all without telephone books. Cost of a local call from a pay phone: 15 kopecks (1½ cents at tourist exchange). The hotel does not charge for local calls. Long-distance and overseas calls must be arranged in advance and for a specific time. The Intourist Office in the hotel will help you arrange a call.

**TELEVISION:** There will probably be a lounge in your hotel which has a television set. Programs are usually broadcast only in the evening. Although the picture is smaller than on the usual American set, it is generally clearer because of the greater number of lines per unit area. Although many of the programs are excellent, and there are no "commercials" in the ordinary sense, there is an abundance of inspirational and politically oriented programs.

**THEATERS:** In Moscow you will have your choice of ballet, opera, musical comedy, classical and modern drama, variety, puppet, and other types of theater. Other major cities offer most of these. The Intourist Office posts the schedule of performances, obtains your tickets, and arranges transportation. Prices are modest. To get good or, sometimes, any seats, you are advised to ask for tickets as far in advance as possible. If you wish to entertain Soviet hosts, the theater is much appreciated and Intourist will get tickets for both you and your guests.

**TIPPING:** Along with some other not officially recognized customs, tipping is expected in the U.S.S.R. You tip waiters and waitresses, taxi drivers, porters, washroom attendants, and checkroom attendants. The driver of the Intourist limousine, who might be coy about taking a tip, will be pleased with chewing gum for his children.



## Put your imagination to work at \$13,000 per year-SENIOR MACHINE DESIGNERS

The expanding RCA Semiconductor Division offers an opportunity to join a stable, progressive organization engaged in commercial work.

An outstanding opportunity to conceive, design, and put into actual operation manufacturing equipment for this dynamic industry is available to experienced designers of proven ability.

Previous experience in designing automatic precision equipment for the assembly, fabrication, and processing of intricate parts will further qualify the applicant for a position with this organization.

### A DEGREE IS DESIRABLE

- Financial Assistance
- Educational Assistance
- Relocation Assistance Available
- Suburban Community

Send resume today to  
Mr. J. B. Daly



**RADIO CORPORATION  
OF AMERICA**

Semiconductor and Materials Division,  
Somerville, New Jersey



## INTERPLANETARY FLIGHT PROPULSION SYSTEMS

(Concluded from page 351)

tems, and the shielding needed for nuclear reactions, for example, may also serve as shielding against damage by collisions with high-speed particles in space.

An interplanetary rocket should be capable of being restarted several times during a journey of several years. Its propulsive system must be capable of withstanding the high initial acceleration at take-off, be restricted in volume, be capable of applying torque or thrust in more than one direction, and be highly reliable. These are strenuous requirements. The engine laboratories in the future, Professor Sutton thinks, will be specially controlled satellites that will permit the operation of engines in the proper environment. "In fact," he said, "it is likely that a major portion of the satellites about the earth soon will become test devices for the development of hardware for interplanetary missions."

Professor Sutton concluded: "The environmental conditions will force us to use different materials, novel fabrication techniques, new failure-detection methods, or new lightweight tanks, and these engines will look very different if compared with present-day devices.

"Different stages of the same vehicle will use different engines, each designed to fulfill one or more specific interplanetary maneuvers in the best possible way. Standard interplanetary stages will be designed and modified slightly for different missions.

"It can be anticipated that there will be two basically different types of missions to any one of the planets. One will convey people and will require fast

transit time, and therefore a large amount of excess energy. These will be multiple stage units and they will initially contain no nuclear rockets to avoid radiation exposure of people. The second category one might call 'freight vehicles' . . . and they will use electrical and nuclear propulsion.

"Because of the reliability problem of running a power plant for several years and because of the meteoric penetration problem, it will become desirable to use several propulsion systems on the same vehicle stage in such a manner that a failure of any one system will not cause a failure to achieve a mission. Mission requirements cannot be determined completely accurately and some spare energy capacity will have to be carried along. If this reserve is not needed during a specific flight, then it can be applied on the return trip to achieve a faster home journey.

"All the various systems seem to offer some growth potential in improved performance, efficiency, lower engine weights, or thrust. But the real need seems to be for a simple, lightweight, high-energy source to replace an airborne nuclear reactor. Because of the complexity and development difficulty of some of these devices, it may be a long time before they become sufficiently reliable to fly.

"The missions in terrestrial and lunar space can and will be performed with chemical rocket units. Those in the inner solar system will again be performed largely with chemical propulsion units for the immediate future, with some of the other propulsion engines becoming superior at a later time. However, for missions to the outer solar system and the far planets, it is essential that some high-performance rocket engine such as the electrical units be developed."



Whoever handles liquid . . .

Handles it better and safer



When he takes advantage of

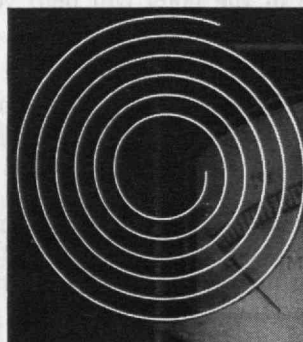
SCULLY Signals, Gauges, Systems.

**SCULLY SIGNAL COMPANY**

174 Green Street, Melrose 76, Massachusetts

Flow Control

Electronics



### "Precision-Gauged" HAIRSPRINGS

More than 25 years' experience making all types of hairsprings for critical instrument applications. High volume production with absolute uniformity.

**PRECISION PRODUCTS COMPANY INC OF WALTHAM**  
WALTHAM 54 • • MASSACHUSETTS

BOSTON

NEW YORK

PITTSBURGH

PORTLAND, ORE.



**LORD ELECTRIC  
COMPANY**

INC.

FOUNDER, F. W. LORD, M.I.T. '93

64 YEARS OF EXPERIENCE IN ELECTRICAL CONSTRUCTION

Enjoy the **LIGHT** touch in clothing  
 . . . the **RIGHT** touch in fashion with . . .



# FAMOUS HASPEL SUITS

3-Month Payment Plan  
 No Carrying Charge  
 Patronage Refund Too  
 8% or 10%



## The Exemplar

Haspel has perfected the tailoring skills necessary to combine fine fashion with automatic wash and wear performance. The Exemplar, automatically washed and dried, can be ready to wear inside of 40 minutes with little or no ironing.

65% Dacron — 25% Viscose Rayon — 10% Mohair  
 49.75

## The Sir Perior

When you choose Sir Perior, you choose the wash and wear suit that is so perfectly right for both your business and social life. Wash it, let it drip dry . . . it's ready to wear with little or no ironing.

65% Dacron — 36% Cotton  
 39.95

## The Prado Cords

Here is the ever-fresh, natural cotton fiber, luxuriously combed and scientifically treated for exceptional wrinkle resistance . . . to stay smooth and crisp all day long. Handsome hairline stripes in many favored shades. 28.75

PUT

**THE  
COOP**

IN YOUR BUY-LIFE





## Holmes & Narver, Inc.

JAMES T. HOLMES

M.I.T. '14

D. LEE NARVER

STANFORD '14

### Engineering Capabilities

Survey	Structural
Civil	Architectural
Sanitary	Mechanical
Electrical	Chemical

828 SOUTH FIGUEROA STREET  
LOS ANGELES 17, CALIFORNIA

## SYSKA & HENNESSY, INC.

### Engineers

John F. Hennessey '24

John F. Hennessey, Jr. '51



DESIGN • CONSULTATION • REPORTS  
POWER PLANT • WASTE DISPOSAL • WATER SYSTEMS  
New York City

## CHAUNCY HALL SCHOOL

Founded 1828. The School that specializes in the preparation of students for the Massachusetts Institute of Technology.

Ray D. Farnsworth, Principal 533 Boylston Street, Boston, Mass.

## ALEXANDER KUSKO, INC.

### Consulting Engineers

141 Main Street Cambridge 42, Mass.  
ELiot 4-4015

### Research and Development in

Magnetics	Transistor Circuits
Electric Machinery	Control Systems

A. Kusko '44  
P. N. Heller '51

J. P. Blake, Jr. '54  
J. A. Caudrey '56

## LOCKWOOD GREENE

### ENGINEERS—ARCHITECTS

Professional Service from Site Selection to Plant Completion  
Plant Location Studies

### Site Investigations

### Complete Design

### Supervision of Construction

### REPORTS

### APPRAISALS

New York

BOSTON, MASS.

316 STUART ST

Spartanburg, S. C.

## TREND OF AFFAIRS

(Concluded from page 372)

### Project Pipe Dream

■ B. T. Tucker, '62, spends a good bit of his spare time these days on a project that is far beyond the scope of freshman course work. With the help of Denys O. Akhurst, Assistant Professor of Electrical Engineering, he has designed a cloud chamber for studying atomic particles—a sophisticated version of the same apparatus he made at home last year in Amarillo, Texas. He will never be graded on how well it works, or quizzed on what he learns.

Mr. Tucker and Professor Akhurst didn't just happen on their mutual interest; every freshman received an invitation in mid-February to work with an expert in some field of science or engineering. "Available" professors in each field were listed, and the students took it from there.

Freshman spare-time research is not entirely new; a few M.I.T. laboratories habitually have "adopted" enterprising underclassmen. But more often their urge to experiment has been squelched under pressures of a prescribed and heavy first-year curriculum. This freshman plight was often lamented, but never so sharply defined as in a 1957 address by Edwin H. Land, Visiting Institute Professor: "He is told, the moment he arrives, that his secret dream of greatness is a pipe dream; that it will be a long time before he makes a significant, personal contribution—if ever." One of Dr. Land's suggested remedies, now become fact, was that freshmen be given the chance to rub shoulders with mature scientists in research.

Many of the 68 professors who volunteered for the experiment were immediately swamped. They expected one or two students apiece, and had as many as 20 calls in a day. Apparently the Class of 1962 has retained a healthy amount of creativity.

### Thanks from Foreign Students

■ The foreign students (over 700) now registered at M.I.T. said "thank you" for a full week this spring by arranging a series of lectures, exhibits, dances, and a soccer game. Abdel Karim Mirghani, senior member of the permanent mission of the Sudan in the United Nations, delivered the keynote address. The Institute has more foreign students in proportion to enrollment than any other American university.

# meissner Engineers

## consultants • engineers • constructors

Processing plants. Bulk materials handling and storage. Conveying systems. Ore and minerals processing. Bridge, expressway and interchange design.

### JOHN F. MEISSNER ENGINEERS, INC.

300 West Washington Street  
Chicago 6, Illinois  
ANdover 3-1944

R. C. MEISSNER '43

THE TECHNOLOGY REVIEW

# PROFESSIONAL CARDS

## JACKSON & MORELAND, INC. JACKSON & MORELAND INTERNATIONAL, INC. *Engineers and Consultants*

ELECTRICAL—MECHANICAL—STRUCTURAL  
DESIGN AND SUPERVISION OF CONSTRUCTION  
FOR  
UTILITY, INDUSTRIAL AND ATOMIC PROJECTS  
SURVEYS—APPRAISALS—REPORTS  
MACHINE DESIGN—TECHNICAL PUBLICATIONS  
BOSTON NEW YORK

## EADIE, FREUND & CAMPBELL CONSULTING ENGINEERS

500 FIFTH AVENUE NEW YORK 36, N. Y.  
*Mechanical — Electrical — Sanitary*  
*Air Conditioning — Power — Process Layouts*  
James K. Campbell '11

## METCALF & EDDY *Engineers*

Water, Sewage, Drainage, Refuse and  
Industrial Wastes Problems  
Airports, Laboratory, Valuations  
Statler Building, Boston 16, Mass.

## THE KULJIAN CORPORATION *Consultants • Engineers • Constructors*

### UTILITY • INDUSTRIAL • CHEMICAL

Power Plants (Steam, Hydro, Diesel), Textile Plants,  
Water & Sewage Works, Oil Refineries, Pipe Lines,  
Army & Navy Installations, Air Fields, Hangars

H. A. Kuljian '19 A. H. Kuljian '48  
1200 NO. BROAD ST., PHILADELPHIA 21, PA.

## FABRIC RESEARCH LABORATORIES, INC.

*Research, Development, and Consultation  
In the Fields of Fibrous, Organic, and Related Materials*

1000 Providence Highway Dedham, Mass.  
(At Route 128 and U.S. 1 Interchange)  
W. J. HAMBURGER, '21 K. R. FOX, '40 E. R. KASWELL, '39

## GILBERT ASSOCIATES, INC.

ENGINEERS AND CONSULTANTS

Malcolm G. Davis '25, *Vice President*  
Allen W. Reid '12 E. C. Edgar '35

Steam, Hydro, Diesel, Nuclear Power Plants; Industrial  
Structures; Plant Safety, Utility Rates, Valuations, Reports;  
Purchasing; Chemical Laboratory

New York • READING, PA. • Washington

## LAUREN B. HITCHCOCK ASSOCIATES *Chemical Engineers*

Industrial Research & Development  
Technical & Economic Evaluations  
Acquisitions of Processes and Plants  
Commercial Chemical Development—Air Pollution Control  
Lauren B. Hitchcock '20 Technical Advisor, John H. Schaefer '26  
60 East 42nd Street ..... New York 17, N. Y.

## FAY, SPOFFORD & THORNDIKE, INC. *Engineers*

Airports, Bridges, Express Highways  
Water Supply, Sewerage and Drainage Systems  
Port and Terminal Works  
Industrial Plants Incinerators  
Designs Investigations  
Supervision of Construction  
Boston, Massachusetts

## CLEVERDON, VARNEY & PIKE

*Consulting Engineers*

HERBERT S. CLEVERDON '10 WALDO F. PIKE '15  
JOHN A. DOW '23 HAROLD E. PROCTOR '17

Structural Designs Foundations  
Heating, Ventilating, Electric and Plumbing De-  
signs, Industrial Buildings, Reports, Investigations  
120 TREMONT STREET BOSTON 8, MASS.

## MAURICE A. REIDY

*Consulting Engineer*

BRIDGES BUILDINGS  
STRUCTURAL DESIGNS FOUNDATIONS  
CONSTRUCTION CONSULTANT AND AGRICULTURAL ENGINEER

*Estimates and Appraisals*

101 TREMONT STREET BOSTON, MASS.

## CHARLES NELSON DEBES ASSOCIATES, INC.

ENGINEERS AND ARCHITECTS

Structural, Electrical, Mechanical, Acoustical  
Industrial, Commercial and Municipal Projects

915 EAST STATE ST. ROCKFORD, ILL.  
C. N. DEBES '35

## MORAN, PROCTOR, MUESER & RUTLEDGE

CONSULTING ENGINEERS

Foundations for Buildings, Bridges and Dams;  
Tunnels, Bulkheads, Marine Structures, Soil Studies and  
Tests; Reports, Design and Supervision

WILLIAM H. MUESER '22 PHILIP C. RUTLEDGE '33  
415 Madison Ave., New York 17, N. Y.

## BREWER ENGINEERING LABORATORIES

*Consulting Engineers*

*Electric Strain Gage Testing • Stress Analysis*  
*Strain Gage Amplifiers • Strain Gage Switches*  
*High Temperature Strain Gages*

MARION, MASS. TEL. 103  
G. A. Brewer '38 S. P. Cammack '57

## CAPITOL ENGINEERING CORPORATION CONSULTING ENGINEERS

DILLSBURG, PENNSYLVANIA

Highways Airports Reports  
Water Supply Surveys  
Sewage Treatment Design  
Bridges Construction Supervision  
Soil Testing

*Branch Offices*

Rochester, N. Y. Saigon, Vietnam  
Robert E. Smith '41, Vice President





and the prophet replied:

*"It is well to give when asked, but it is better to give unasked, through understanding."\**

## *Gifts by Will*

TO THE

## Massachusetts Institute of Technology

The tale is told of Almustafa, the prophet, who, having awaited for many years the ship that would return him to the place from whence he came, was making the final descent to the shore when the folk of Orphalese crowded about him. They besought him before departing to "disclose us to ourselves, and tell us all that has been shown you of that which is between birth and death."

With words of wisdom, an answer appropriate was given to the woman holding a baby, to the ploughman, to the merchant. Begged one, "Speak to us of GIVING," and the prophet replied:

*"It is well to give when asked, but it is better to give unasked, through understanding;*

*And to the open-handed the search for one who shall receive is joy greater than giving. All you have shall some day be given;*

*Therefore give now, that the season of giving may be yours and not your inheritors'."*

Through the years the prophet's words have held true, for even today he who "through understanding" includes the MASSACHUSETTS INSTITUTE OF TECHNOLOGY as a beneficiary in his will can experience thereby a two-fold satisfaction. The successful culmination of his search for a worthy recipient and the anticipated results his generosity will assist in accomplishing. These satisfactions give an added value to the span of man's days and project his usefulness to his fellowmen far into the future.

The Massachusetts Institute of Technology because of the high quality of the education given its students, its effective research work for aiding America in peace as well as in war, and the high character of its governing body and academic staff qualifies as an institution for serving our American ideals for the present and in the years to come.

But the search, the finding, and the anticipated accomplishments are not enough; for without the properly-worded record, man's plans for the future may go awry. Hence the prophet's importuning, "—give now," should be heeded. The giving need not be an immediate physical transaction, for written directions replace the spoken word when the speaker is no longer present, and a donor can frequently make by will a gift which is larger than he can make while living. Truly, *"it is well to give when asked, but it is better to give unasked, through understanding."*

A booklet "Gifts by Will," outlining different forms of bequests to M.I.T., is available to you or to your attorney by writing to:

Director of Development

Massachusetts Institute of Technology

Cambridge 39,

Massachusetts

\* "The Prophet" by Kahlil Gibran

# ALUMNI AND OFFICERS IN THE NEWS

## Felicitations . . .

Among the Alumni to whom birthday congratulations are due in May are SUSAN W. PEABODY'94, who celebrates her 95th birthday on the 14th; four who mark their 90th year; twelve who reach their 85th anniversary; and eight who become octogenarians, as listed below with dates of birth:

May, 1869—WELLES BOSWORTH'89 on the 8th; BENJAMIN W. GUPPY'89 on the 13th; DELIA M. O'CONNELL'96 on the 24th; and CHARLES C. WATERMAN'92 on the 29th.

May, 1874—CHARLES G. HYDE'96 on the 7th; JAMES A. GUTTRIDGE'97 on the 11th; STUART A. COURTIS'99 on the 15th; WILBUR W. DAVIS'00 on the 18th; CARDELLA D. BROWN'99 on the 19th; HERMANN C. LYTGOE'96 on the 21st; PAUL R. BROWN'96 on the 24th; JOHN DONALDSON'07 on the 25th; JOHN E. WARREN'98 on the 26th; HENRY W. BALLOU'97 and CLARENCE GOLDSMITH'98 on the 29th; and HAROLD W. GAY'99 on the 30th.

May, 1879—CLAYTON M. SIMMERS'05 on the 1st; ALFONSO MADERO'01 on the 3d; ARTHUR H. NICKERSON'02 on the 4th; ALFRED H. KELLING'05 on the 5th; CHARLES F. GARDNER'02 and CHARLES T. LEEDS'00 on the 14th; and SHELDON D. GRAFF'00 and LEROY L. THWING'03 on the 28th.

With the addition of these 25, the rolls of the Alumni Association will include a total of 80 nonagenarians and, in addition, 755 octogenarians.

## Fruits of Their Labor . . .

In addition to the 23 Alumni recorded on page 346, others have advanced as follows:

GEORGE L. ROY'17 as a member, Building Standards Committee, Springfield, Mass. . . . STEPHEN B. NEILEY'22 as engineering manager, Battery, Polyfibron, and Textile Division, Dewey and Almy Chemical Division, W. R. Grace and Company . . . WILLIAM M. PERKINS'25 as planning engineer, Memphis and Shelby County, Tennessee;

BENJAMIN WILBUR'32 and BENJAMIN PARRAN, 3d, '43, respectively, as structures engineer and as program administrator, Ordnance Department, General Electric Company, Pittsfield, Mass. . . . CHARLES A. PIPER'35 as head, applied mathematics section, Computer Division, Bendix Aviation Corporation, Los Angeles;

CHARLES D. SMALL'38 as head, Washington District Office, Defense Systems Department, General Electric Company . . . GEORGE A. BLAIR'40 as assistant manager, Roslindale office, First National Bank of Boston . . . WALTER B. BREWER, Jr., '40 as associate manager of the Airborne Systems and Test Department, Atlas Program Office, Space Technology Laboratories, Inc.;

ROBERT T. BENWARE'42 as chief engineer of equipment engineering, Western Development Laboratories, Philco Cor-

poration, Palo Alto, Calif. . . . JACK R. WILLIAMS'42 as European manager, six associated European companies, Worthington Corporation . . . LEONARD F. GLANCY'44 as operations manager, Vernistate Division, Perkin-Elmer Corporation, Bridgeport, Conn.;

RANDALL D. ESTEN, Jr., '45 as assistant branch chief, U.S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va. . . . PETER S. GIVEN'46 as assistant chief engineer, SKF Industries, Inc. . . . JOHN A. MAYNARD'46 as chief product engineer, Boston division, Minneapolis Honeywell Regulator Company;

ARTHUR M. SPIRO'47 as a vice-president, Waumbec Mills, Manchester, N.H. . . . CHARLES B. REIMER'48 as head, electron microscope laboratory, Eli Lilly and Company, Indianapolis, Ind. . . . SI TA SHIANG'51 as process engineer, Badger Manufacturing Company, Cambridge, Mass.;

JOSEPH E. ALIBRANDI'52 as assistant plant manager, missile plant, Raytheon Manufacturing Company, South Lowell, Mass. . . . WILLARD A. BRIDGES, Jr., '52 as manager, European sales engineering office in Paris, Thompson-Ramo-Wooldridge Products Company . . . ORVILLE D. PAGE'52 as manager of Military Systems, Dage Television Division, Thompson Ramo Wooldridge, Inc., Michigan City, Ind.;

MONROE M. DICKINSON, Jr., '54 as senior engineer, Space Guidance and Control Systems, Owego, N.Y., plant, International Business Machines Corporation . . . VICTOR C. HOUK'54 as manager, market planning, industrial tube products department, Electron Tube Division, Radio Corporation of America.

## Pegasus . . .

Recently published are the following new books by Tech Alumni:

*Talks on Religion* by HERMON F. BELL '03. (New York: Philosophical Library, Inc., 1958, 73 pages, \$3.00.)

*Successfully Finding Yourself and Your Job*, which tells how one can take inventory of his own abilities and preferences and describes skills and personality qualities necessary in various fields, by F. ALEXANDER MAGOUN'18. (New York: Harper and Brothers, 1959, 238 pages, \$3.75.)

*The General Semantics of Wall Street*, a book which outlines some basic principles of the study of how people perceive the world around them and how they cope with their environment and applies these principles to the world of the stock market, by JOHN MAGEE, Jr., '25. (Springfield, Mass.: the author, 1958, 423 pages, \$12.00.)

*Principles of Noise*, by JACOB J. FREEMAN'40. (New York: John Wiley and Sons, Inc., 1958, 299 pages, \$9.25.)

*Nucleonics Fundamentals*, a broad undergraduate survey of the fields of nuclear physics and engineering which is

one of the publisher's series in nuclear engineering, by DAVID B. HOISINGTON'40. (New York: McGraw-Hill Book Company, Inc., 1959, 410 pages, \$9.50.)

*The Burning Air*, a novel about two young people and their love, by EUGENE MIRABELLI, Jr., '53. (Boston: Houghton Mifflin Company, 1959, 149 pages, \$3.00.)

## Obituary

FRANCIS C. WILLIAMS'84, February 22\*  
HARRY L. NOYES'90, March 15  
WILLIAM A. SOLEY'93, February 24  
HENRY O. LACOUNT'94, February 22\*  
RIGBY WASON'94, September, 1958  
MRS. MARGARET H. SHURCLIFF (MARGARET H. NICHOLS)'03, February 28\*  
SIDNEY M. HENRY'05, March 16  
HARRY W. BUKER'06, May 20, 1958\*  
HARDY CROSS'08, February 11\*  
JOHN W. NICKERSON'09, March 23  
CHARLES A. CALLAHAN'10, February 15  
HOWARD HALL SEARLES'10, March 8  
OLIN V. CHAMBERLIN'11, January 19\*  
LOUIS L. WETMORE'11, March 29  
WILLIAM F. MCKNIGHT'12, March 21  
EDMUND G. BROWN'13, January 29\*  
KENNETH FRANZHEIM'13, March 13  
JOHN P. GALLAGHER'13, July 30, 1958\*  
IRA W. KNIGHT'13, February 16\*  
NATHAN H. POOR, 2d, '13, January 22\*  
ALLEN W. SPICER'13, December 12\*  
HAROLD L. HARLOW'14, March 23  
BEVERLY A. GISH'15, March 15, 1957  
JOHN W. K. GLYNN'15, August 9, 1958  
ARTHUR S. HATCH'15, September 26  
ROBERT A. MILLER'16, January 11\*  
ALEXANDER ASTORIAN'17, March 13  
SIDNEY S. BATCHELDER'17, February 20\*  
CARL M. GILT'17, March 23  
H. CHANDLER STEARNS'17, March 12  
KENNEY A. BURGESS'18, June 16, 1958  
WILLIAM C. HADDOCK, Jr., '19, September 8, 1956\*

HOWARD H. SEARLES'19, March 8  
COMMANDER LOUIS GEORGE HOROWITZ '21, February 9\*

JAMES B. NEWMAN, Jr., '21, February 7\*  
EUGENE S. WEIL'21, February, 1959\*  
SAMUEL A. GAYLEY'22, January 28\*  
JESSE E. JONES, Jr., '22, December 6\*  
WILL I. LEVY'22, January 29\*  
LEO S. HAYES'23, January 31\*  
NORMAN H. GILCHRIST'24, March, 1959  
JOSEPH M. KIERNAN'25, February 13\*  
CARLOS V. ARELLANO'26, March, 1959  
CECIL A. P. THOMAS'26, January 21\*  
CHARLES E. TONRY'26, December 21\*  
EARL C. WHEELER'26, February 16\*  
MRS. RAYMOND H. ADKINS (OLIVE S. BRUCKHEIMER)'27, September 5, 1958\*  
MANUEL V. PATINO'29, October 12\*  
WILLARD E. ROBINSON'29, May 13, 1958\*  
CHARLES C. DICKINSON, Jr., '30, January 15

CHARLES H. KAISER'31, August, 1955\*  
LUTHER B. TURNER'31, March 5  
ALBERT M. CHAMBERS, Jr., '33, January 28\*

EDWARD J. HEIZER'35, 1954  
BENJAMIN F. WILBOUR, Jr., '43, 1949  
ORVILLE L. MILLS'49, January 22\*  
\*Further information in Class Notes



# NEWS FROM THE CLUBS AND CLASSES

## CLUB NOTES

### Central New York

The January meeting of the M.I.T. Club of Central New York was the most successful one of the year so far. A total of 47 attended the meeting, including members of the club, their guests, and 23 educators from the local school districts and Syracuse University. Originally Dr. Jerrold Zacharias, Head of the Physical Science Study Committee, was scheduled for the meeting; but he found it necessary to turn his visit over to Dr. E. P. Little, the Executive Director of the committee.

In the course of returning from a trip prior to coming to Syracuse, Dr. Little became delayed by the winter weather; and last minute arrangements had to be made to have Dr. Guenter Schwartz take his place. Dr. Schwartz arrived in Syracuse in the middle of a winter snowstorm and gave us a very good presentation, despite the fact that his baggage with all his displays did not arrive until it was almost time for him to take his plane back to Boston.

Dr. Schwartz discussed the work of the Physical Science Study Committee, which includes preparation of new textbooks, laboratory manuals and equipment, motion picture films, and teacher's manuals necessary to teach physics to high school students so they will learn to understand and view physics as the modern physicist does. We were very fortunate to be able to see one of the films which the committee has made on the properties of crystals.

In the brief question period which followed Dr. Schwartz's presentation it was evident that many of the local educators are seriously considering becoming qualified so that they may teach the physics courses in their schools. It was unfortunate that there was not enough time to answer all the questions, but Dr. Schwartz supplied the address of the committee so that all those interested could write to obtain more information.

The M.I.T. Alumni who attended the meeting were: Robert Davis'46, Lewis Edgerton'21, Edward Finnegan'51, Edwin Gruppe'22, Winslow Hartford'30, John Jeris'53, William Lauder'35, Earle MacLeod'38, Edwin Moyer'44, Paul Ostergaard'49, Dewey Sandell'49, Conrad Schuerch'40, Adolph Sebrell'40, Donald Stearns'31, Ruth Van Wagenen'29, and Alden West'44. — PAUL B. OSTERGAARD '49, *Secretary-Treasurer*, 111 Sherbrooke Road, East Syracuse, N.Y.

### Chicago

The calendar year 1959 opened January 6 with a very successful plant trip to the Fisher Body plant in Willow Springs. The plant trip was preceded by

a social hour and dinner at the Edgewood Valley Country Club and was arranged by Jack Page'31. About 70 Alumni and guests were in attendance.

This particular plant of the Fisher Body Division is one of five located throughout the country. It fabricates large stampings, primarily for Chevrolet, Pontiac and Cadillac, receiving about 40 carloads of steel per day and shipping about 110 carloads of stampings per day. Stampings include tops, hoods, floor assemblies, and door assemblies, which are then shipped to other Fisher Body plants which normally are located adjacent to an assembly plant of one of the automobile divisions.

Members were impressed by the high degree of automatic transfer equipment which was used on about 25 lines of large stamping presses. We found the General Motors people extremely courteous and receptive, even though they are not equipped to handle plant tours for large groups. This was quite an awe-inspiring experience and demonstrated clearly the substantial amount of capital investment required in the automotive industry.

The second meeting of the calendar year was held February 24, at the Hotel Sherman. Ira J. Bach'32, Commissioner, Department of City Planning, Chicago, presented to about 40 Alumni and guests the plan for rehabilitation of the core of our city. It is a staggering program calling for the expenditure of \$1.5 billion over a 20-year period. The plans include facilities for federal, state, and city governments as well as the University of Illinois. Also included is a redevelopment of residential areas close to the center of the city. Accomplishing the plan will require considerable relocation and revamping of transportation facilities and harbor facilities.

Meeting arrangements were made by Don Feters'32, and all agreed the food and meeting arrangements were excellent and up to the content of the program. — JOHN T. SHUTACK'43, *Secretary*, Booz-Allen and Hamilton, 135 South LaSalle Street, Chicago 3, Ill.

### Hartford

The Hartford contingent has had a fine start to another interesting year. The first meeting was held at the Officers Club of Hartford, November 6; and after a fine roast beef dinner, Professor John Elliott'49 of the M.I.T. Metallurgy Department gave an extremely interesting speech on "A View of the Soviet Education System," based on his recent visit to that country.

The next get-together of the club was for a plant visit to the Nuclear Division of Combustion Engineering, Inc., Windsor, Conn., the afternoon of January 20. The total number was limited to 25, and it was fortunate that the weather was terrible as we had 40 who

stated that they were interested. Only 21 showed up, so all who came were able to make the tour of the plant, which was extremely interesting. First the S.I.C. project was explained by J. H. Randall '48, who is in charge of reactor design and a fellow M.I.T. man. Then came a tour of the facilities, which included talks and demonstrations on "Advanced Critical Experiment" by W. P. Stoker; "Health and Safety" by R. L. Hoover; "Engineering Development Laboratory" by H. Geller; and "Materials Development Laboratory" by W. P. Chernock and A. S. Powell.

The next scheduled meeting is March 18, and we are again to meet at the Officers Club of Hartford, where we will hear a talk by Dr. Malcolm Gordon, Director of Biochemical Research, Institute of Living, Hartford. Dr. Gordon will talk on "What Current Research Is Doing to Help Alleviate Mental Illness." Our spring meeting, which will follow in May, will be the annual ladies' night especially designed to interest both members and their wives. — FRANKLIN P. SEELEY'42, *Secretary*, 186 South Main Street, West Hartford 7, Conn.

### Lehigh Valley

The winter meeting of the M.I.T. Club of the Lehigh Valley was devoted to prospective students of Tech and their advisers from the local high schools. This represents a continuation of last year's winter meeting program. The dinner and discussion took place on February 25, 1959, at the Lehigh Valley Club in Allentown, Pa. There were 23 members present and our guests included 14 male and 2 female students and 10 counselors, 2 of them ladies!

Mr. D. Hugh Darden, Executive Secretary of the M.I.T. Educational Council, gave a very interesting, informal talk on "Going to College Today." He described the steps taken in choosing a college or university properly and the means of financing attendance at the school of higher learning; and he stressed the necessity of being successful in the college career. This was followed by more than an hour of questions and discussion from the floor on scholarships, student loans, methods of selection by the admissions office, college statistics, and many other related subjects. Everyone felt that the meeting had been informative to the prospective student and the old Alumnus as well. — J. T. ACKER'24, *Secretary*, 154 Langhorne Avenue, Bethlehem, Pennsylvania.

### New York

On March 12, 1958, approximately 40 interested club members braved the elements to attend a technical dinner on Corrosion Control. Dr. W. J. Sweeney'28, Vice-president of Esso Research and Engineering, was chairman for the

occasion; and Professor H. H. Uhlig'32, in charge of the M.I.T. Corrosion Committee, gave a very interesting talk on corrosion and corrosion control. John B. Calkin'32 was chairman of arrangements for this affair. More than 20 joined for the meeting at the club headquarters in the Biltmore Hotel for cocktails and dinner.

At the time of this writing a combined Long Island-Westchester meeting is scheduled for March 20, 1958, at the Sky Club of the Franklin National Bank building at Roosevelt Field, Long Island. Dr. George R. Harrison, Dean of the School of Science at M.I.T., will speak on topics covered in his recent book, *What Man May Be*. Richard G. Steuer'46 for the Long Island Group and William H. Mueser, Jr.'52, for Westchester are cochairmen for arrangements.

At this writing there are 1,410 paid members and about 200 who have not elected to continue membership by payment of dues. We still have hopes that many of these will pay their dues for this year. The Long Island section is currently undertaking an active telephone campaign to increase membership. John J. Casey'40 is handling arrangements to send out a club brochure to some 200-300 people who have recently moved into the New York area and to approximately 1,500 prominent Alumni outside the New York Area in the United States. — VERNON O. BOWLES'33, *Secretary*, Holly Ridge Farm, Katonah, N.Y.

## Philadelphia

Our annual election dinner meeting, which took place at the Barclay Hotel on January 27, was notable in a number of respects. A very fine program following the social and epicure hours produced two fine speakers. Despite his heavy schedule since his new appointment, Dr. J. A. Stratton'23, delivered a talk on the origins of growth of M.I.T. William A. Patterson, the President of United Airlines, gave us an excellent insight into the problems of running an airline.

Another event of note was the election of new officers. They are as follows: President, Kenneth S. Lord'26; First Vice-president, William H. Bertolet, 3d, '48; Second Vice-president, Wiley F. Corl, Jr.'39; Third Vice-president, Charles W. Hargens, 3d, '41; Secretary, Herbert R. Moody'41; Assistant Secretaries, Enno T. Sauer'37 and Robert G. Fisher'44; Treasurer, Lee C. Eagleton '44; and Assistant Treasurer, Graham H. Bell'42.

Executive Committee members are: Harold F. Marshall'19; Helen F. Tucker'33; A. Rufus Applegarth'35; Stephen B. Hazzard'43; Ezra Garforth, Jr.'48; Robert H. Elliott, Jr.'50; and Thomas V. Griffiths'57.

As far as the local Alumni are concerned, this change in officers represents the end of an era. For the last 15 years or so, practically everything the Club has done has been under the aegis of Sam'41 and Nancy McCauley. It's hard to write a thing like this note

without making it sound like an obituary. However, the most eloquent statement that your Correspondent can make is that we're going to miss their active participation seriously. Except for the organizing zeal of the officially anonymous Nancy, such historic events as our Longwood Garden conclaves would probably not have occurred. This team has set high standards for future officers. The membership is sincerely grateful.

Our next meeting is scheduled for May 23, when we'll have a Wilmington meeting. Jim Libby'35 of Du Pont is arranging a dinner meeting to include a tour of the Hagley Museum, which exhibits a history of the Brandywine industrial development in a delightful horticultural setting. — HERBERT R. MOODY'41, *Secretary*, 3010 Tower Road, Huntingdon Valley, Pa.

## Virginia

The members of the M.I.T. Club of Virginia and their wives met at the Commonwealth Club on Friday, March 6. After a social hour and a dinner, the group was addressed by Adolphe H. Wenzell, M.I.T. '17, Vice-president and Director of the World Bank. Mr. Wenzell explained the functions of the bank and the process for getting loans. Loans are made in the following categories: 1) public utilities, 2) transportation, 3) manufacturing, and 4) agriculture. Loans go to nations which meet the standards as to political, economic, and financial requirements. Private capital from World Bank bonds and the bank capital supplied by the 68 member nations is used as the source of the money. — CARSON L. BROOKS'35, *Secretary*, c/o Metallurgical Laboratories, Reynolds Metals Company, 4th and Canal Streets, Richmond, Va.

## Washington

The M.I.T. Club of Washington is announcing the establishment of two luncheon centers in the Washington area where members and visitors to the area may meet monthly for luncheon, beginning in April. One center is at the Lee House, 15th and L Streets, Northwest, where members and visitors will meet the first Thursday of each month for lunch. Leader of this center is Leon Flanders'42. The second center will meet at the Pentagon Executive Dining Room, Room 3C1063, on the third Thursday of every month. Leader for this center is Captain George Humphreys '31, U.S. Navy. Those interested in attending luncheons at the Pentagon are advised that they must be present at the Executive Dining Room prior to 11:30 A.M.

On Friday, May 15, Dr. Joseph Banks Rhine will address the club on the subject of "Extrasensory Perception" at the regular dinner meeting to be held at the Cosmos Club. Dr. Rhine is professor of psychology at Duke University and director of the Parapsychology Laboratory. In addition to hearing from Dr. Rhine, the club will hold elections for officers for the next club year.

Two "100-man Teams" have performed an excellent function of stimulating interest and membership of local Alumni and Alumnae in our local club. One team in the fall and a second team in the early spring have done much for the club. Other M.I.T. clubs might be interested in adopting this technique.

Work under George Thompson'53 in connection with the publication of a directory of all Alumni and Alumnae in the Washington area is continuing. Necessary information from local Alumni is now being collected.

At the executive committee meeting held February 9, 1959, Ernest W. Reiser'30 was elected to the executive committee. He replaces Michael K. Johns'53, who resigned after serving the club as treasurer, vice-president, chairman of the nominating committee, and assistant treasurer of the regional conference held in Washington in March, 1958. — HOWARD K. SMEAD'51, *Review Secretary*, 6732 Nevius Street, Falls Church, Va.

## Women's Association

The third meeting of the season was held in the Emma Rogers Room, Saturday, February 14. After an excellent luncheon prepared and served by Charlotte Sage'13 and her committee, a brief business meeting was held.

The guests and speakers at this meeting were women students from foreign countries. Six students were present, representing Switzerland, China, Israel, Iran, Japan, and Uruguay.

Miss Edna Miller of Israel, a graduate student in economics, spoke of the complexities of daily life in a small new nation which admits eight to ten thousand immigrants per month.

Mrs. Kayako Trano of Japan, graduate student in metallurgy, told of the postwar revolution in the position of women in Japan. Mrs. Kayako was wearing flowered red silk with a silver colored obi.

Miss Marguerite Nussle of Switzerland, graduate student in political science, spoke about primary and secondary education in her country. She also commented on the recent vote in Switzerland, denying suffrage to women, by saying that the Swiss are traditional and conservative.

Miss Zoreh Sarmad of Iran, recently a graduate student in physics and now at Harvard, said that secondary education in Iran covers a great variety of subjects, all compulsory, and there may be as many as 23 subjects in one week at the 11th grade level. — ANNA BAILEY '54, *Recording Secretary*, 61 Columbia Street, Brookline 46, Mass.

## CLASS NOTES

1884

Francis Charles Williams, one of the three remaining members of the Class, died at the age of 85 on Sunday, March 1, in Sheridan, Wyo. Mrs. Guy C. Peterson, widow of an '01 M.I.T. man, has forwarded to The Review Office an article



about Mr. Williams' life which appeared in the *Sheridan Press* and from which the following material is quoted:

"Mr. Williams was born December 6, 1863, in Brattleboro, Vt. Boyhood was spent in Massachusetts, and he was graduated from high school at Roxbury. In 1884, Mr. Williams received his degree in engineering from M.I.T.

"He was an instructor in applied mechanics at M.I.T. for one year. He then took up surveying as a profession, working in Massachusetts, Rhode Island, and Connecticut in 1885 and the following year. In August of 1886, he came westward to Nebraska as a draftsman with the Burlington railroad, working as a surveyor in Missouri; the Black Hills, Custer, and Deadwood, S.D., areas; and in Kansas.

"He came to Sheridan as assistant to Edward E. Gillette, the engineer who was laying the right of way for the Burlington through this area in 1894. His friends say he was a 'mathematical genius' and had established corners here before other surveyors had done so, a fact they later verified. He surveyed the line from Sheridan to Billings, Mont., for the railroad. After establishing his residence at Sheridan, Mr. Williams also was employed as engineer for the city from 1910 to 1914 and served as county surveyor many times. He was in charge of construction of the water line from Big Goose Creek to serve Fort Mackenzie, which was built at a cost of \$100,000. He was also in charge of the sewerage system construction in Sheridan in 1906 and as county surveyor, surveyed many reservoir sites including Dome Lake and Lake DeSmet.

"For a short time, he was a partner with Mr. Gillette as locating engineer. In 1910 he located lines and served as superintendent for construction of the inter-urban electric railroad that ran from Sheridan to Fort Mackenzie and from Sheridan to the mining region on Tongue River. From 1912 to 1914, he served as city engineer; he was appointed highway commissioner for the fourth district from 1918 to 1920; and from 1933 to 1938, he was director of public works for Cheyenne."

Mrs. Williams, the former Mattie Wulfjen, died last December 18. He is survived by a daughter, Eula (Mrs. Samuel Calvin) Cumming of Upperville, Va., and five grandchildren.

Mrs. Peterson, who knew Mr. Williams and his family, adds that she has visited Sheridan many times: "And I am also familiar with all that big country and have been over that stretch of railroad from Sheridan to Billings for which Mr. Williams surveyed the line in 1894. I have also been to the Custer battlefield. This was certainly a wide and wild country at the time Mr. Williams surveyed it!"

## 1891

Those of us who are reasonably secure, with confidence we shall have three meals a day and a good place to sleep for the rest of our time on this earth, need to be constantly reminded that, for all conscious life on the planet, the hazards are great and catastrophe may be just around the corner.

Hope and faith are good qualities to possess, and I have a lot of them to spare and to share. But here is our gifted friend and classmate out in San Mateo, Calif., who points up the possibility for us all; and we love and admire him for sharing his wisdom with us. Bradford Choate is a prince of a man, and here is his good letter. It is with pleasure that I pass it on: "Dear Channing: I have received both your postal cards, the last one yesterday. I have not written because I have been too busy and tired and Mrs. Choate is quite ill still.

"We bought 27 Engle Road, a too large house; and the people who lived in 327 just across the angle of the street had a house too small, so we swapped. It took a little dickering and work with the Title Company. Finally got it straightened out, and now I am straightening out my income tax. As we have bought and sold three houses, I had to explain. We are now nearly settled but on account of illness are not all unpacked. Fortunately, we had not moved into 27 Engle Road. But I had bad luck as the movers in the warehouse lost the base to my nice and old (A. Wilson make) grandfather's clock, about 1790, which I took out of the Choate house at Essex, Mass., in 1900. Of course that upset me and especially Rose, but I guess this is the last move.

"Years are rapidly going on. I continue as usual but get very weak if I don't have plenty of foods or do too much work. The more I consider the times the more I think the nation is headed for a big financial crash. I don't see how we can carry the debt and taxes, we become slaves of money, labor will control all things and finally wind up broke, and then a dictator. I see religion is coming forward again and may save us. Will write again, but I am worried by dollars and buy less and less. Yours, as always, with good thoughts and prayer for you and yours, Brad Choate."

Here is another letter from the daughter of Carl Bunker. We all send our love and best greeting to Carl and to his faithful and devoted daughter, too: "Dear Mr. Brown: I thought you'd be interested to know that my remarkable Dad has once again gone through more surgery — on last Wednesday (March 4). Needless to say, Papa is still very uncomfortable; but the doctor assures us that the operation went smoothly without complications. After two or three weeks of hospitalization, the doctor thinks Papa will be able to return to the nursing home. Papa's courage has been remarkable during his long period of serious illness. Sincerely, Nellie F. Revell." — WILLIAM CHANNING BROWN, *Secretary*, 15 Forest Avenue, Hastings-on-Hudson, N.Y.

## 1892

Recently the Secretary has received a copy of an article in the *Worcester Telegram* of February 2, 1959, regarding the career of Channing Wells, of whom the Secretary wrote a brief article in the February issue of *The Technology Review*. This article gives a much more complete summary of Channing's career.

Mr. Wells was born in Southbridge, Mass., August 13, 1870, a son of the late

Mary E. McGregory and George W. Wells, one of the founders and second president of the optical company.

He attended Southbridge schools, Nichols Academy, Dudley, and Massachusetts Institute of Technology. He joined the optical company June 1, 1891. He retired as trustee in 1951.

Mr. Wells lived in Southbridge most of his life. He devoted himself to the optical business, the community, and other business activities. He was formerly a director of Southbridge National Bank, now a branch of Worcester County National Bank; Southbridge Water Supply Co.; Warren Steam Pump Company; and Gillette Safety Razor Company. He was a trustee of Southbridge Savings Bank and a member of the Rotary Club and Southbridge Merchants and Manufacturers Association, now the Chamber of Commerce. He also took an active interest in the Southbridge Young Men's Christian Association.

When Mr. Wells first joined the American Optical Company, it had less than 600 employees. It employs more than 10,000 persons today and has additional factories in Chelsea; Putnam, Conn.; Keene, N.H.; Brattleboro, Vt.; Frederick, Md.; Buffalo, N.Y.; and Belleville and Nicolet, Canada. Ophthalmic, optical, and industrial safety products and scientific instruments are made. Mr. Wells worked in various departments and in 1893 began calling on customers in his father's place. Courteous and friendly, he sent back many orders and kept the plant busy. In 1908 Mr. Wells was elected vice-president. In 1913, following the death of his father, he was elected president, a position he held for 23 years. As executive officer he was responsible for directing operations during an era which included a world war and a major depression.

Mr. Wells led an active outdoor life and was particularly fond of golf. He was instrumental in the building of the Co-hasse Country Club and served as its president for a period. His other clubs included the Southbridge Club, of which he was a charter member; the Union Club of Boston; Brookline Country Club; Wiannon Club; Megantic Fish and Game Corporation of Megantic, Maine; and the Tin Whistle Club of Pinehurst, N.C.

He became a 32d degree Mason and was a member of the Doric Chapter of Royal Arch Masons. Another interest was landscape gardening, and the garden of his home was one of his achievements.

Mr. Wells married Irene Kelley of St. Louis, Mo., in 1898. Following her death he married her sister, Mrs. Lucille Hannan. Mrs. Hannan died on August 25 of last year.

Mr. and Mrs. Wells established a home on Main Street in Southbridge, where they lived for years. In later years homes were also established at Fiske Hill, Sturbridge; Wiannon, Cape Cod; and Smoke Tree Range, Palm Springs, Calif. — CHARLES E. FULLER, *Secretary*, P. O. Box 144, Wellesley 81, Mass.

## 1894

The Secretary spent a couple of weeks in Florida in the latter half of February, especially for the purpose of consultation

with his cochairman of the board of governors of the Refrigeration Research Foundation and to visit with old friends, both M.I.T. men and others. It was especially pleasant to meet there Colonel F. F. Longley and his wife, long-time friends of the family. Colonel Longley, a graduate of West Point, came to the Institute later to study sanitary engineering, as of the Class of 1905. A son, John, and the Secretary's son Sam, were of the Class of 1933. Others met there were Don Robbins'07 and former Bursar Del Rhind, who were wintering at Clearwater Beach. Both were guests at a small dinner arranged by John Bristow'14 and other food technologists, including two graduates of Course XX, for your Secretary. At the University Club in Winter Park the Secretary also ran across several M.I.T. men. These meetings were the high spots of the brief vacation.

Again the Secretary reports with regret that another member of our Class has been taken from us. Henry Osgood Lacount died on February 22, 1959, after a short illness due to hardening of the arteries. A native of Somerville, Mass., where he was born June 12, 1871, and a graduate of the high school of that city, he entered M.I.T. in September, 1890, as a student in the Course in Mechanical Engineering, and received his S.B. degree in June, 1894. He returned to the Institute in the autumn, and received his second S.B. in electrical engineering in June, 1895. He then entered the employ of the Associated Factory Mutual Fire Insurance Company as a draughtsman, was rapidly promoted, and remained with that company throughout his whole professional career, retiring as manager in 1942. He was soon afterward asked to return to the company as assistant treasurer, a position he held for three years, retiring in 1945. During his long career he became an expert in his field.

Lacount was also greatly interested in building up the College Avenue Congregational Church in Somerville, which had been founded by his grandfather, Reverend W. F. Lacount, and further strengthened through the aid of his father. He was married in 1897 to Miss Georgia Bates; and a daughter, now Mrs. Philip Card of Marblehead Neck, was born in 1899. Twelve years later a son, Sherwood Lacount, was born; and as he grew up he became greatly interested in theatrical matters, was the director of the Boothbay (Maine) summer playhouse, and is now prominent in the theatrical business in Hollywood, Calif.

As a devoted father, Lacount also became deeply interested in theatrical matters in his later years, while also continuing his deep interest in his church. For many years the Lacounts had a summer home at Kennebunkport, Maine, near the sea, although Henry never became deeply interested in either fishing or sailing.

In his student days he was serious and unassuming, liked and respected by his classmates, but never entering actively into class affairs. His retiring disposition always remained, and unfortunately he rarely attended our class reunions at the five year intervals after graduation. He had no interest in fraternal organizations. But the few of us who were privileged to

know him recognized his fine ability and his high character and innate loyalty. The warm sympathy of his surviving classmates is sincerely extended to his family.

Don't forget our 65th reunion and Alumni Day June 15.—SAMUEL C. PRES-COTT, Secretary, Room 16-317, M.I.T., Cambridge 39, Mass.

## 1895

The Secretary has received a letter from Mary B. Matthes, wife of classmate Gerard H. Matthes, dated March 16. The letter reads, in part: "Today is Gerard's 85th birthday, and we were married 55 years on March 3. We had planned a trip west to see our nine great-grandchildren: the tickets were bought and a drawing room reserved for his special comfort four nights on the Santa Fe. Friday he fell and fractured his hip and sprained an ankle. I am told he will be confined in the hospital at least two months."—LUTHER K. YODER, Secretary, 69 Pleasant Street, Ayer, Mass.

## 1896

The Secretary is indebted to an '02 class officer, who knows how thin the class news can get, Dan Patch'02, for a clipping from the *Rockland (Maine) Courier-Gazette* that tells of the election of Richard O. Elliot as president of the Thomaston National Bank for the 40th time. There is a very good picture of the president; one would never realize that he was M.I.T.'96, though the article states he was and goes on to say: "The family business of shipbuilding and sailmaking claimed him for several years after college days until he turned to the field of finance, in which he has established an enviable record for long service to his community."

George Hewins, who retired from the New England Power Service Company some time ago, is living in South Natick, Mass. I am sorry to report that his wife died last July. George is in good shape physically though he suffers from loss of memory, as most of us do to a greater or less extent. His address is that of his son-in-law, Page Sanderson, 29 Wall Street, Wellesley.

There is also on file a snapshot of Jack Eynon taken in his yard at San Diego. The file will be open for inspection at the annual class meeting on June 15 at the Alumni luncheon. Jack Eynon says he hears from Irving Merrell occasionally. They are two of a group of seven that lived in Rutland Square: much happier quarters, enjoyed by more than 500 undergraduates, were described at a luncheon in the Old Oyster House on Union Street in Boston by Howard R. Bartlett, master of Burton House.

There was a reception at the New England Trust Company that the Secretary attended hoping to see Henry Hedge there. He met the assistant vice-president, Irvin McD. Garfield, Jr., who is a nephew of our classmate, the late Abram Garfield; and vice-president Elliott R. Hedge, son of Henry Hedge, from whom he learned that his father was in the Baptist Hospital recovering from a fall in his home. A visit to the hospital found Henry looking

very well for an invalid. He had no broken bones but an injury to a nerve in his arm, from which he is recovering after a three-week stay in the hospital. Sitting comfortably in a chair, he entertained his daughter-in-law, his co-Secretary, and his daughter, Mrs. John Hammond. Henry will probably return home shortly.—JAMES M. DRISCOLL, Secretary, 129 Walnut Street, Brookline, Mass. HENRY R. HEDGE, Assistant Secretary, 105 Rockwood Street, Brookline, Mass.

## 1897

A widely read and philosophical member of the Class—Edwin P. Osgood—wrote to your Secretary under date of February 28 enclosing an article on the "Secret of Existence." We, personally, have always had a desire to study philosophy but have, we regret to say, spent too much time on less important matters.

Osgood's article, we trust, will not only prove of interest but will also encourage written discussions of some of its phases upon the part of our surviving members—discussions that may serve to fill future issues of these otherwise somewhat barren class notes. A copy of the whole article may be obtained by sending a post card to The Review Office requesting one.

The letterhead reads, "Osgood Engineers, 1022 Forest Street, Reno, Nev., and part of the letter follows: "Truly I was sorry to hear of Breed's passing. My son was over this morning and said a Mrs. Professor up at the University wanted him to lecture on surveying before a real estate class. I suggested he scan Breed and Hosmer's *Surveying*, with emphasis on the practical that they so well point out.

"Yesterday I got a companion and nurse to stay with my wife of 55 years, who broke her hip January 6, and I went out; cleaned up on four jobs in hours, though on one of them we were stuck in the mud up on mesa on Pevaine Mountain. We were in patches of snow and clay mud. Backing up I strayed five inches from the straight and dry tracks and bogged down an hour, in spite of the four-wheel drive.

"Believe it or not, I am still in such high gear that I have not filled out papers for a probable government pension. Also, waiting for events that don't transpire has delayed an answer to your circular letter. Some time back you noted the 'vicissitudes' of one of our Class; perhaps I classify, for I have thrown away over 50 years of my life in a community that so far has not mustered enough energy to cash in on its opportunities. However, I may rate as a 'fortunate-unfortunate,' for a \$50,000 education (versus a less than \$5,000 cost to my father for M.I.T.) has come my way. Whether the community or I cash in for reward remains to be seen.

"You were seeking something worth mentioning; some ideas have materialized and I have long intended to send a 'Classmate's Report to His Classmates of '97.' All are older, probably, except Irénée, who passed 80 in December, 1956, six months later than I in June. . . .

"Glance back. When the human animal climbed down out of the tree an immaculate creation (the basis for one religion



for one world) gave man the opportunity to 'become his own keeper.' That is identically what Omar Khayyam saw 700 years ago when he wrote: 'I sent my soul through the invisible some secret of the future to spell, / And it came back to me and said I myself am Heaven and Hell.'

"When we became human beings 5,000 years or so ago, we had learned of and acquired property. Morgan said it was of the greatest assistance in bringing the monogamian family and civilization, but added: 'Property became the master passion of the human race and now threatens to destroy the very family it so helped to create.' Property, by and large, is nothing but debt — the right to an unearned income. The inspired writers of the Bible saw the danger of it and required that it be written off every seven years, as set forth in Deuteronomy. . . .

"Goods have a definite cost of production; any increase over it is an inflation. To that extent the total cannot be sold unless the inflation reappears as buying power. It so appears if invested in new capital goods that may be mills, factories, and power plants, or schools, hospitals, and churches, in country of origin. Thereby we balance the budget of business whether operating capitalism or anotherism, and thereby all the goods and services that can be produced in any country can be sold. The abundance dreamed of by technocrats can become a reality.

"Some 4,000 years ago good King Hammurabi cut in clay tablets: 'The sole and only right to water is the beneficial use thereof.' Our ever arid western states put the identical wording into their statutes. It has taken some 4,000 years for an irrigation engineer to point out that if he had had the like economic law laid down — 'The sole and only right to a profit (an inflation) is the beneficial use thereof'; if it had been observed we could have been, relatively, millions of years ahead. . . .

"A thinking man finds the Bible is absolutely right: the fall of man did take place beginning that 5,000 years ago when property became his master passion. It can be made clearer: he — man — fell in love with his own psyche, himself, his rugged individualism. He became obsessed with self, then sex, then property, and then obsessed with cocktails, comics, and crime. Eureka! We can beat Marx: 'Humans of the world, arise! You have nothing to lose but your ignorance!'

"I may be like Freud, who said he might wake up to find he was all wrong (and he was!). All my classmates except three are older and more mature than I. Some may undertake to wake me up, which would be enlivening — at least to me.

"We are one billion years along our way; the best astrophysicists say we have ten billion to go before the sun (barring a tummyache), expanding under the burning of its hydrogen, throws its arms or its head around us and says 'kerput.' Never was life more interesting. The space age is mere poppycock; we are not built for it. We still have a dim chance to bring Heaven down on earth — provided we lose a little of our ineffable ignorance."

We submit the above for your study and consideration. — JOHN P. ILSLEY, *Secretary*, 26 Columbine Road, Milton 87, Mass.

Miss Henrietta L. Graves, now 96 years old, formerly living in Richmond, Maine, had the misfortune to fall and break her hip on August 30, 1957. She recovered completely, but soon after had a series of several illnesses which resulted in her going to the Leighton Convalescent Home in Gardiner, Maine. About two years ago I noted in this column that Miss Graves had a beautiful flower garden in which she worked every day, weather permitting. May I suggest sending a card to this courageous lady?

Mrs. John B. Thompson (nee Edna Chandler), formerly of Bangor, Maine, may now be reached via Box 248, Bridgewater, Va.

After a stormy trip from Boston to Tampa, Fla., February 10, your Secretary finally arrived some 11 hours late in Saint Petersburg, in which beautiful city these items are being written. Several days later Ed Packard was driven over to the house in St. Petersburg where my sister lives, and we had a long chat. He can get from his wheel chair into his automobile with help, so is able to enjoy the outdoors in this manner. I have also had a phone chat with E. Everett Pierce.

*Tentative program for the 60th reunion of the Class of '99:* your committee presents the following suggested program. You are requested to make suggestions and to notify your Secretary well in advance of Alumni Day if you are planning to attend. June 14, Sunday: get-together dinner, place and time to be announced. June 15, Monday, Alumni Day: A.M., inauguration of Dr. Julius A. Stratton '23 as President of M.I.T.; noon, class luncheon, Du Pont Court, with special table for '99; afternoon, guided tour to new buildings and places of special interest on the campus. Transportation will be furnished. The Alumni dinner will take place in Rockwell Cage in the evening. Your committee hopes many classmates will find it possible to come back to their alma mater for their 60th reunion and bring members of their families. A class letter with full details will be mailed sometime in May.

The members of the 60th reunion committee are: William A. Kinsman, President; Miles S. Sherrill; Hervey Skinner; BURT R. RICHARDS, *Secretary*, 349 West Emerson Street, Melrose 76, Mass.; and PERCY W. WITHERELL, *Assistant Secretary*, 84 Prince Street, Jamaica Plain 30, Mass.

## 1901

In the April notes I reported the death of Francis Baxter on January 24. I have since received the following letter from his son: "My mother has asked me to write thanking you for your kind note of sympathy on behalf of the Class of 1901. My father's friends will be glad to know he was in good health and enjoyed life until his death from a sudden heart attack. He lived quietly with my mother and sister in Pasadena. His interests were gardening and also keeping up with the latest developments in engineering and scientific fields."

John Boyle, III, from Washington, D.C., says: "Still engaged in the practice of patent law. Just returned from Key West, Fla., after a month's vacation in January. Been vacationing there annually since 1947. Swimming there is the best ever. About half of my time is taken up as a part-time consultant expert patent adviser to the General Services Administration. Just now engaged in the trial of a patent infringement against the government in the U.S. Court of Claims. Still enjoy good health and hope to attend the June reunion."

From Nat Patch, II, in Buffalo: "Nothing new to report. I am still carrying on in the same old groove; and while my health has been up and down, I have been fortunate in remaining pretty well for a man of our years — the entire membership of the Class must be about the same years as I am. I am having my celebration for my 80th birthday on February 15. I did enjoy the class notes that appeared in The Technology Review last issue, although I was somewhat shocked to see so many are dying. It seems that is to be expected as the years go by. We surely have had a real winter, so it has been tough for the old boys to fight their way to and from their jobs; but here's hoping that we are going to have spring a little earlier because the winter began earlier. My best regards and all good wishes to all the Class."

Stanley Sears, III, Washington, D.C., writes: "Nothing startling to report. Since retirement at the age of 70 from the mining section, Engineering Division, Income Tax Unit, Treasury Department, I have loafed very enthusiastically. Until a couple of years ago I played golf two or three times a week over at the Army-Navy Country Club in which I had a life membership dating from World War I, when I was commissioned a captain of engineers. Now I find that even golf is a bit too trying physically. I content myself with reading (to improve my alleged mind, what there is of it) elevating literature, such as Franklin P. Adams' volume of *Innocent Merriment*, W. S. Gilbert, and Ogden Nash. An upright and virtuous life is quite amusing, I find. Why don't you try it? Regards to the fellows."

Ethel Gleason, IX, from Kissimmee, Fla., sends best wishes to all. Everett Pendleton, III, East Orange, N.J., reports: "Spend time in traveling — have been in Maine, Vermont, Chicago, Salt Lake City, Bryce and Zion Canyons, Las Vegas, Los Angeles, Dallas, New Orleans, Fort Pierce (Fla.), Miami, Jacksonville, Arlington (Va.), and Washington, D.C. Left business in 1947 (retired). Wife died December 7, 1956."

You should have received the questionnaire concerning the reunion by now. Will you please reply promptly, in order that proper arrangements may be made. — THEODORE H. TAFT, *Secretary*, Box 124, Jaffrey, N.H. WILLARD W. DOW, *Assistant Secretary*, 78 Elm Street, Cohasset, Mass.

## 1902

Little news has filtered through to your Secretary. The Alumni Office reports that Miss Lydia Weld has left Carmel and that her new address is 2770 Lombard Street,

San Francisco. This should be a very pleasant location, since if our map is correct she will be near the Presidio and equally near the Marina overlooking the Golden Gate. Dan Patch tells of excellent skating this winter, while Lew Moore says he is getting settled down in Vero Beach, Fla. As this is written in March we are getting back our balance after the severest snowstorm of the winter—a humdinger of a northeaster with snow, hail, rain and thunder. The weather is never boring in this area. —BURTON G. PHILBRICK, *Secretary*, 18 Ocean Avenue, Salem, Mass.

## 1903

Those of us who were present at our 50th reunion will recall the bell ringing in which some of our classmates participated. We are saddened to learn that the leader of that group, Mrs. Margaret H. (Nichols) Shurcliff, VII, died February 28, 1959, at her home, 66 Mount Vernon Street, Boston, Mass. She was for many years president of the American Guild of English Handbell Ringers, the New England Guild of Handbell Ringers, and the Beacon Hill Bell Ringers. To the people of Boston, her band of bell ringers was one of the traditional sights during Christmas Eve caroling on Louisberg Square and Mount Vernon Street. Mrs. Shurcliff also was a tennis player and instructor. She won the New England Women's Singles championship at the Longwood Cricket Club in 1903 and 1904. Another of her interests was carpentry work, which she had studied at M.I.T. She taught carpentry for many years at the Ellis Memorial, and also designed and made reproductions of early American furniture through a small firm known as 'Pegleggers.' Also a former president of the Ipswich Garden Club, she was for six years a member of the Boston Public Library examining committee and a member of the League of Women Voters, the Civil Liberties Union, and the League for Democratic Control.

Mrs. Shurcliff was the daughter of the late Dr. Arthur H. Nichols and Elizabeth Fisher (Homer) Nichols of Boston and Cornish, N.H. She attended the Shaw School and Miss Folsom's School and made her debut in 1898. She married Arthur A. Shurcliff, landscape architect and town planner, also an M.I.T. graduate, Class of '94, who died in 1957. She leaves three sons: Sidney N. Shurcliff of Boston and Ipswich, William A. Shurcliff of Cambridge and Ipswich, and John P. Shurcliff of Louisville, Ky.; three daughters, Mrs. Francis C. Lowell of Concord, Mrs. Franz I. Ingelfinger of Cambridge, and Miss Alice W. Shurcliff of Washington, D.C. She is also survived by two sisters: Miss Rose Standish Nichols and Miss Marian Clark Nichols of Boston; and by 10 grandchildren.

We have further reference to Mrs. Edna D. Stoddard Ramseyer, IV, who died December 20, 1958, as a result of an automobile accident. She was born in Washburn, Maine, January 5, 1881; moved with her family to Roxbury, Mass., in 1889; attended Boston schools, graduating from the Girls' High School in 1898. After graduating from M.I.T., she specialized in landscape architecture until 1912, when she accepted a position with Smith Col-

lege as an assistant professor of botany; she held this position until 1918. Then happily married to Arthur Ramseyer, she again resumed her position at Smith in 1930 for a year, later residing in Chestnut Hill, Mass. Mr. Ramseyer passed on in 1948. She was highly esteemed by all who knew her. To quote another '03 classmate, Mrs. William A. (Martha Brown) Hutcheson, IV: "A-1 is what I would say of her in everything that counts—not only for what she did but for what she was." She is survived by a sister, Mrs. George H. Noone, IX, '03, of Newton Center, Mass.; and a nephew, Richard Noone of Portland, Maine. Thanks are due Mrs. Julia M. Sears, 12 Hampden Street, Wellesley, for this information.

On January 31, 1959, the town of Braintree, Mass., dedicated a new \$130,000 water filtration plant on the shore of Great Pond, in memory of our former classmate, Thomas E. Sears, who had been, it was said, the heart and brains of the town water department for two score years. A bronze tablet on the exterior of the filtration plant was unveiled by his son, Thomas E. Sears, Jr., M.I.T.'32. —LEROY B. GOULD, *Secretary*, 36 Oxford Road, Newton Centre 59, Mass. AUGUSTUS H. EUSTIS, *Treasurer*, 131 State Street, Boston 9, Mass.

## 1904

Just before Washington's Birthday we sent each of you the official announcement of our 55th reunion and a directory of living members of the Class. It was sent by second class mail to save postage, so if anyone didn't receive a copy please let us know at once and we will send one by first class mail.

If you have forgotten to send a reply, won't you please do so at once so we will know how many to plan for. We hope you will make a real effort to attend; but if you positively can't we would like to get a message to read to those present. This may be our last formal get-together. Time marches on.

We hear that Cy Ferris is on one of his periodical trips to the West to look after his lumber interests but expects to be back for the reunion. A note from Mrs. Eager says Bill is in the hospital getting a broken hip mended and won't be with us. He was hit by a driver making too much speed on a wet pavement.

Charlie Haynes was in town recently looking fit after his winter vacation. He is tired of retirement and has gone back to work with National Polychemical on a part-time basis. —CARLE R. HAYWARD, *President, Acting Secretary, and Reunion Cochairman*, Room 35-304, M.I.T., Cambridge 39, Mass. EUGENE H. RUSSELL, JR., *Treasurer and Reunion Cochairman*, 82 Devonshire Street, Boston 9, Mass.

## 1905

Maybe I ought to take back what I said in my notes in the February issue about the sissies who ducked out for Florida at the first sign of winter. Yesterday we experienced what the natives here say was the worst snowstorm since this same date (March 12) in 1888. A neighbor's car is stuck in my driveway, hence the town

plow cannot get in to plow us out; so we are apparently marooned for a definite period. However, we asked for it; and it is beautiful.

Very little to write about this month. My correspondents apparently took a vacation, all except Andy Fisher, who stresses the point that we ought to be making plans for Alumni Day at Cambridge on June 15, 1959. He is right. We have for several years had a remarkable turnout for the dinner. This year we will make a more determined effort to be seated in a body at the same table. The Alumni committee in charge of seating arrangements planned a table for our entire registration last year, but friends from a neighboring class usurped our reservations and a number of us had to find seats at remote spots. This year we apparently should do our own policing—and early. Make an effort to be there. There has been no appreciable demand for a 54th reunion, but we should be making plans for our 55th; and Alumni Day 1959 offers a good opportunity for so doing.

I have received a complimentary copy of Norman M. Chivers' new book, *Island Yesterdays*. All classmates who knew Norman at M.I.T. should read it, especially those who had experience 50 years ago in building railroads or highways through the wilderness. It is very interesting reading. Chet Shaw, VI, is a bit resentful of my remarks in the February issue about Florida. He, however, has more territory to champion, as he and his wife are continuously traveling with their trailer. "Heading west in April," he says.

To those who knew her, this is to announce that Ros Davis' widow died here in Sandwich, N.H., just a few days ago. —FRED W. GOLDTHWAIT, *Secretary*, Box 123, Center Sandwich, N.H. GILBERT S. TOWER, *Assistant Secretary*, 35 North Main Street, Cohasset, Mass.

## 1906

Material for these notes is scarce and perhaps it is your Secretary's fault because he has been woefully dilatory with his correspondence. In some of my letters I have been asking about a preference as to location for our 55th reunion: whether on the Cape or on campus or its vicinity. In a welcome letter from Fay Libbey, III, he says he feels that the chance of coming on for it is rather remote, but he would rather be closer to the campus than down on the Cape. To quote Fay: "The American Mining Congress meeting in San Francisco last fall was the first one I have missed in several years, and I was very sorry to miss seeing Guy Ruggles. Charley Willis always goes. He is one of the mainstays of A.M.C. Expect to see Henry Mears on March 20, when we have an American Institute of Mechanical Engineers meeting. Bob Cushman and I get together once in a while, even if only by telephone, and agree with each other on the horrible shape the country and the world are in—about which there can hardly be any argument." So right, Fay.

How the miners do congregate along the West Coast: Henry Hiss in Los Angeles, Walter Hopkins in Pasadena, Bill Deavitt in Beverly Hills, Edwin Chase in



Burbank, Bill Neilson in Orinda, and Ralph Thayer in San Diego. Another was Harry Williams Baker, whose address was Monrovia. Just recently the Alumni Office has reported that he died on May 20, 1958. Harry entered with us from Salem, Mass., and after graduating in Course III was with the Sullivan Machinery Company of Claremont, N.H., as a salesman for their mining equipment for a number of years. Around 1919 he went to St. Louis with the Chicago Pneumatic Tool Company; and except for a spell from 1922 to 1925, he was with them until he retired, probably in the late Forties, being then their manager of diesel sales in New York City. During those years in the mid-Twenties he was with Eastman Chemical Corporation in N.Y.C. Later addresses were Millwood, N.Y., and Princess Anne, Md. Harry was a member of the Mining Engineering Society at Tech but ever since then, so far as we know, had never shown any interest in the Institute or his Class or his classmates. Of his family and other interests we have no information; do you?

Will we be seeing you June 15 at Dr. Stratton's inauguration on Alumni Day? Let us know in advance if we can be of any help in any way, and we would like to have a lot of letters and cards to pass around at the luncheon. Now is the time to take that pen in hand! — EDWARD B. ROWE, *Secretary-Treasurer*, 11 Cushing Road, Wellesley Hills 81, Mass.

## 1907

Your Secretary pro tem is very apologetic for missing entirely the notes for the April issue of *The Review*. This is the first time in the history of 1907 that there have been no class notes. Now that I have properly organized the work, it should not be too difficult to get the information ready for the printer if you men will furnish it to me. The Alumni Office has asked to change the title of my office to read "Secretary and Treasurer" in order that I might receive all items of information from the *Review* and Alumni Offices. I have agreed to this on a temporary basis.

I first want to thank all the '07 men who wrote to me following Bryant Nichols' death. Many wished me to know the high regard they felt for Bryant and to express a belated thanks for his years of untiring service to the Class. Others thanked me personally for my interest in the class activities and urged me to carry on the work Bryant had so suddenly laid down. Mrs. Nichols is still living in Whitinsville at 23 Leland Road. She is planning, in the early spring, to move to the Boston area and live with one of her daughters. Elsie has asked me several times to include in these notes her thanks and appreciation for the many letters of condolence she received from Bryant's classmates.

Clarence Howe wrote me a nice note and included the following bit of personal information: "I have not seen any of our classmates for some considerable time. My principal job is that of chairman of the board of Price Brothers and Company, Limited, manufacturers of newsprint and lumber. I am also a director of Aluminum Limited and a number of

other Canadian companies. As a side line, I am chancellor of Dalhousie University, which is largely an honorary occupation, although I visit Halifax six or seven times a year in the course of my duties." We do hope that, with no political duties to interfere, Clarence can make the June reunion this year.

Jim Garratt is still active in construction work and at present is engaged in adding to the water supply facilities for the city of Newark, N.J. When any of the '07 men are looking for points of interest to visit in Washington, D.C., I suggest they go to the National Museum to visit the newly opened room where the decorated tiles which were given to the museum by Stan Wires are on exhibition. The room is of modern design for traditional tiles from the Sixteenth Century to early Twentieth Century. This is the first extensive tile collection in the United States.

Don Robbins is spending the winter in Florida, where he can golf extensively. He has a great deal of interest, as most of us do, in the activities of his sons and their families. Arthur '40, the younger boy, lives near Camden, N.J., where he is with Campbell Soup Company as director of production control for all their plants. Don Jr., '38, lives in Fairfield Conn., and is an officer and director of the Singer Manufacturing Company. Both of his sons spent two years at Tech after graduation from Dartmouth.

I received an interesting newspaper clipping showing the unveiling of a plaque in honor of our classmate, Allan Cullimore. You may recall Allan was president of Newark College of Engineering from 1920 to 1949. He died in 1956. A new six-story building, housing classrooms, offices, a cafeteria, and student center, went into use last year and has recently been dedicated as Cullimore Hall. We have not heard very frequently from Arthur H. Jansson, of Jackson Heights, Long Island. He was engaged in editorial work for Babcock and Wilcox Company but retired two years ago. In December, 1957, he had a very serious operation and is still under the doctor's care, although he considers his condition to be quite satisfactory.

In the little pamphlet, "M.I.T. Alumni Make News in 1958," I trust you all noted the sports notes and that three '07 men were listed there. We had very little time during undergraduate days to engage in this type of activity, but retirement from active mental work has given some an opportunity to excel in sports. I quote: "Last August Arthur Christensen traveled from Beaufort, S.C., to Savannah, Ga., a distance of 45 miles, in 4 hours. He did it on a water ski, one ski. Mr. Christensen, a member of the Class of 1907, is 75 years old. Another '07 man, Frederick E. Moses, pilots his own plane, a Cessna 182. He recently had an orientation hop in a T-33 jet trainer at Otis Air Force Base, Mass. Still another '07 man, Milton E. MacGregor, last summer completed his self-appointed task of climbing all New Hampshire peaks of more than 4,000 feet. Mr. MacGregor is in his 74th year." Mac has another accomplishment that all 74-year-old youngsters cannot take part in. I refer to bowling. He is shown as a member

of the Cape Cod Class A Candlepin Championship Bowling Team in the *Cape Cod Times* for February 6, 1959. Mac's score was 972 for 10 strings.

A few more cards have come in, reporting on attendance at our June reunion. Bill Egan will not be able to be with us. Leverett Cutten will be celebrating his 55th reunion at Bates College and plans to present an altar set for the Bates Chapel on this particular week end. Chet Vose, who has come over to Oyster Harbors to spend a few hours with us at our past reunions, is at present in a nursing home and confined to bed.

I shall soon get out a letter in reference to the reunion. As of now, we have 22 men who plan to come and 16 who hope to come. Keep in mind the reunion dates — June 12 to 14 at Oyster Harbors — PHIL WALKER, *Secretary and Treasurer*, 18 Summit Street, Whitinsville, Mass.

## 1908

Our third dinner meeting of the 1958-59 season was held at the M.I.T. Faculty Club, Memorial Drive, Cambridge, Mass., on Wednesday, March 11, at 6:00 P.M. Bunny Ames, Bill Booth, Nick Carter, George Freethy, Sam Hatch, Bill Medlicott, Paul Norton, and Joe Wattles answered the roll call. We were favored with several guests: Mesdames Ames, Freethy, Hatch, Norton, and Wattles. A pretty good turnout for a March meeting when we have to compete with Florida, ocean cruises, and the common cold.

Les and Helen Ellis had hoped to be with us, but as they were leaving for Florida the next day, had to pass it up. Henry and May Sewell, who had planned to come, developed a virus which made it unwise to come up from Norwell. Miles Sampson had just returned from a six weeks' sojourn in Florida and felt like staying in Fall River for a while. Fred Cole's leg still bothers him. The cast has been removed, but he didn't feel up to making the trip to Cambridge. Weather-wise we were lucky, for the next day we had the worst storm of the winter.

Following our sojourn in the Cocktail Lounge, we adjourned to Dining Room #1 for our bountiful repast. Joe Wattles showed us some fine Kodachromes taken in his recent Caribbean cruise.

Our 51st reunion will be held at the Melrose Inn, Harwichport, Mass., on the Cape, June 12, 13, and 14. The Beach House, as in the past, will be our headquarters. Try to make it. Ladies invited.

We are very sorry to report the death of Hardy Cross at his home in Virginia Beach, Va., on February 11, 1959. How about the Alumni Fund? Have you done your duty? If not, please do so soon. H.A.S.N.? — H. LESTON CARTER, *Secretary*, 14 Roslyn Road, Waban 68, Mass. LESLIE B. ELLIS, *Treasurer and Assistant Secretary*, 230 Melrose Street, Melrose 76, Mass.

## 1909

We are most fortunate that we shall not only be present at the inauguration of President Stratton which occurs on the morning of Alumni Day, but shall be actual participants in the event. We are

to march in the procession wearing academic gowns supplied by the Institute and should have advantageous seats. It was just 50 years ago, during our commencement, that Richard Cockburn Maclaurin was inaugurated the sixth President of the Institute on the sixth of June, 1909. It was also at this time, June 6 to 9, that the second All Technology reunion was held, as many of us remember.

C. Weston Radford, I, has written from Oshkosh, Wis., to Francis Loud: "Mrs. Radford and I fully intend to be present at the 50th reunion of the Class of 1909 in June. However, we have a complication. We are leaving the middle of March for a trip to South Africa and will not be back in this country until the first of June. We will just about have time to get home, wash out a shirt or two, and then head for Boston." He then asks Francis to make reservations for them. Perhaps they can tell us something of their trip.

Unfortunately, Phil Chase will be unable to attend the anniversary, since he and his wife are leaving in April to be gone about three months. Their ultimate destination is the annual meeting of the International Electrotechnical Commission in Madrid the first two weeks in July, to which Phil will be a delegate. The Secretary and Muriel are leaving Wednesday, two days after Alumni Day, to attend the same meeting, at which he is also a delegate.

Among the replies received was one from Mrs. Carroll Paul (Helen Longyear) from Marquette, Mich. This is the first that we have heard from her for a long time. She enclosed a generous check for an amount much greater than the \$5.00 requested and for which we wrote her a special note of thanks. Her brief message was: "Sorry to turn this in so late — it got misplaced. Have a good time at your 50th reunion." Unfortunately she finds that she will be unable to attend.

In the April Review we told of sending a note of sympathy to Sally Denison relative to the death of Orville. From Cornish, Maine, she has replied as follows: "Thank you for your kind words about Dennie. He was a wonderful father and husband and a loyal friend. Will you also please tell the Class of 1909 that my family and I deeply appreciate their sympathy and also thank you for putting an item in *The Review*." — CHESTER L. DAWES, *Secretary*, Harvard University, Pierce Hall, Cambridge 38, Mass. GEORGE E. WALLIS, *Assistant Secretary*, 185 Main Street, Wenham, Mass.

## 1911

On February 12 the *Framingham* (Mass.) *News* carried the following item: "There was a large attendance at the funeral services for Orville B. Denison, 68, former executive director of the Framingham Chamber of Commerce, at St. Andrew's Episcopal Church Sunday afternoon at 2 o'clock. Delegations were present from the Framingham Rotary Club, the Chamber of Commerce, and St. Andrew's Church, together with representatives of the New England and Massachusetts Associations of Commercial Executives, of which Mr. Denison was a

past president. The Massachusetts Institute of Technology, of which he was formerly Alumni secretary, and the M.I.T. Class of 1911, of which he was permanent secretary, also attended, together with many friends and relatives. There was a profusion of floral tributes. President Malcolm Fryer of the Association of Commercial Executives, managing Director at Haverhill; Frank Potter, Vice-president of the association and Vice-president of the Gardner Chamber of Commerce; and Frank Townsend, first Vice-president of the Cambridge Chamber of Commerce, were among those in attendance. Reverend John U. Harris, rector, conducted the services; and the organist was Ida Lavinia Bentley. Following cremation at Newton, the remains will be buried in the family lot in Edgell Grove Cemetery. Robert K. Wadsworth was in charge of arrangements."

From the Alumni Office we learn of the death of Olin V. Chamberlin, II, on January 19, at Washington, Pa. Olin was a member of the track team at the Institute and vice-president of M.I.T. Athletic Association his senior year. We hope to have further details later.

Sara Denison has forwarded some mail which arrived at Wellsweep too late to be read by Dennie. Included is a short note from Bill Whitney, V, saying: "Fell on ice just before Christmas and cut or broke flesh on left arm at elbow. Started to heal O.K., then stopped. Had to have it operated on a month ago today. Ten days in the hospital. Expect to start back to office for a short stay Monday."

Last month we had a note on the retirement of John A. Bigelow, IV. Johnnie wrote a really long letter to Dennie and Sara on February 12: "It was nice of you to write to congratulate me on my retirement from my city engineer's post. Actually I don't like the idea, and had much rather be going to City Hall every day for five or six hours, when for the past five years most of that time was spent conferring with industrialists, realtors, land developers, and so on, that are now concentrating on Marlboro as being the last spot between Boston and Worcester which has space and facilities for population and business growth. You, Dennie, always were amused by the many offices and civic duties I had always taken on and never was able to relinquish. So I am now chairman of the planning board, vice-chairman of the board of library trustees, custodian of foreclosed tax title property, on the off-street parking board, secretary and treasurer of the Chamber of Commerce (which is now just a stand-by organization as the City Industrial Commission functions in its stead), trustee of the hospital (though I take no active interest), on the Republican City Committee (though no longer chairman — 16 years was enough), honorary member of Rotary, and probably a few other minor things. But soon I shall resign from most of them. I still have enough architectural and engineering private practice to keep me busy as long as I am able. My wife Anne sends her best wishes. We have a granddaughter who plans to be married in April. She went to Clark for two years. The younger granddaughter is a sophomore at Northeastern."

And another good letter from Joe French, IV, to Sara: "Tell Dennie that our family are all well and happy. Our six children are all married and have given us 18 grandchildren — 10 girls and 8 boys. All of the families are in Michigan except our boy Joe, Jr. He is married and living in Stratford, England, where he has accomplished the job of getting his doctorate in literature in two and one-half years' residence. He specialized in dramatic arts and is a Shakespearean expert. He has produced many plays at the famous Shakespearean Institute theatre at Stratford-on-Avon. We expect him home in June this year. Yolanda and I spent a delightful time with Joe and his wife traveling over Europe in the spring of 1957. I am still active as architectural chief at Albert Kahn Associates, Architects and Engineers, Inc., here in Detroit. Of the 15 original stockholders, I am one of nine who remain. The corporation is larger, and very active in many fields of architectural building. I should retire but I would not know what to do with my time. In June we will come east to meet Joe, Jr., on his return from England; and we will be visiting in the Cape and our relatives in New England. Last year we spent our spring vacation in California visiting and sightseeing. In August we went to Denver and Estes Park with the Detroit Commandry of Knights Templar. We always go on these trips and have wonderful times." Joe enclosed a snapshot of Yolanda and himself with 17 of their grandchildren.

Don Stevens sends a letter from Sara Denison and suggests I pass along the following: "I am still very busy at writing notes. So far I have written about 200 of these, but as I told the family this morning I think the pile of unanswered ones is growing bigger instead of smaller. Everyone has been so wonderful to me and I can't help feeling that Dennie fulfilled his destiny. I don't think that I have ever known anyone who was as beloved as he was, and it is a great joy and consolation to all my family and me the way people talk about him. I didn't start out to say all these things, but I couldn't help it."

Also another relay, Sara to Don to Jack, of a thank-you letter written to Alec Yereance, I, by Carole Clarke, Secretary-Treasurer of 1921, before he knew Dennie was no longer with us, which contains the following complimentary paragraph: "Of course, you people in that wonderfully active and outstanding Class of 1911 have such a strong bond which ties the group together that you probably minimize these kindly gestures. It has been one of the brightest spots for me over the years to receive so many timely helps from Obie — 'Mr. Class Secretary' himself — who excels all other secretaries; so you can see that I am already greatly indebted to 1911 for a lot of favors in the past." On the copy of this letter which went to Dennie, Carole wrote: Salutations, Mr. Bronze Beaver, and may blessings and bounty flow to all the Clan of 1911. You people always seem to do the nicest things and, I assure you, they are appreciated. We have missed you at Alumni Day and I am wondering if we are to have the pleasure of seeing you this June. My sincerest good wishes



to you." Carole, I am afraid you are a nice guy too.

The Alumni Council appointed the following committee to prepare a resolution on Dennie: D. R. Stevens'11, Chairman; J. F. Duffy'11; C. S. Ell'11; Professor L. F. Hamilton'14; J. A. Herlihy'11; and J. A. Lunn'17. The resolution is to be presented at the March meeting of the Council.

For a follow-up on the memorial to Dennie mentioned last month, the following communication from Roy MacPherson needs no elaboration. Let's make it a 100 per cent participation.

"Classmates: In common with you, and I am sure it is also true with a great many Technology Alumni, I feel that with the passing of Dennie we have lost 'Mr. Technology' himself. He not only held 1911 together and in the forefront, but was also an inspiration and helping hand to thousands who followed us, with his freshman camp and welcoming committee work. His place cannot be filled in all its breadth by anyone.

"At the time of his death and in anticipation of the profusion of flowers expected from friends and business associates, Ina suggested that she would prefer that we put our tribute into something of a more permanent memorial to Dennie. This idea was presented to our President, Don Stevens, and Secretary, Jack Herlihy, and with their approval was presented to the 28 class members attending the funeral. It apparently met with universal agreement.

"Many of you know that Dennie was senior warden of St. Andrew's Episcopal Church in Framingham and deeply interested in the new edifice recently erected. There is still much to be done there; and the thought is to establish at this church, which was so dear to him, a permanent memorial in his honor. This has been discussed with his rector and with our beloved Sallie Denison, and both feel that it would be a fitting tribute to the man who has done so much for us all.

"There are class members who are able and willing to contribute substantially to an Orville B. Denison Memorial Fund; but it is my thought and hope that this tribute to Dennie be shared by all 1911 men, irrespective of the amount they want to contribute. He belonged to all of us. Don and Jack seem to feel that because of my being located in Framingham, knowing St. Andrew's Church and the rector, as well as having been Dennie's oldest friend (high school and M.I.T.), I should head this fund.

"Therefore, classmates, will you send me your checks, payable to the Orville B. Denison Memorial Fund. I don't care how small or how large, just as long as all join in. It will be our way of saying 'Thank you' for so much that Dennie did for so many.

I have already received checks from other Alumni who have heard of this project. A strict accounting will be made of all funds received, and the Class will be kept advised of progress made. The funds will be deposited in the Framingham National Bank subject to joint signatures of Don Stevens, Jack Herlihy, and myself. (Signed) Roy G. MacPherson, 80 Warren Road, Framingham, Mass."

Since these notes are written two months before you read them, it is possible you already have sent your check for the O.B.D. Memorial Fund. If you have not, Roy is waiting to hear from you. — ORVILLE B. DENISON, *Secretary*, 1909-1959. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

## 1912

Your Secretary has just returned from a few weeks in Florida and while there tried to contact old friends in 1912.

I talked with Bill Canaday in DeBary and learned that his wife has just recovered from a second operation for cataracts. She is now driving the car again and is completely recovered. Bill had a hard time with his flowers last year due to the severe frost. He now has 17 poinsettias in the ground and 32 more in pots which he will soon set out. His pansies are doing wonderfully well, as this year they have had plenty of sun and warm weather.

I also talked with Ted Marceau in St. Petersburg and found him and his wife both well. Ted is still an active shell collector, and has a wonderfully complete selection of West Coast shells.

Max C. Mason has moved from Hillsboro, N.H., to a very attractive house that he has remodeled on Hunt Pond in Hancock. He would be delighted to see anyone driving his way this summer. Edwin O. Upham has moved from Montreal to 1 Rosemere Boulevard, Rosemere, P.Q., Canada.

A clipping from the *Syracuse Post-Standard* by the Right Reverend Malcolm E. Peabody, Bishop of Central New York, about Fred Barker I think would be of interest to you all: "Frederick William Barker was a man of unusual quality by reason of a rare combination of abilities and tastes. These gave him a personality at once perspicacious and delightful. Whether he devoted himself to his business, to the personal needs of his fellows, or to the general welfare of the community, he was able to render services of a peculiarly helpful kind.

"It is not often that one very competent in affairs is equally at home in the fields of art, of music, and of nature. Educated in the profession of chemistry at the Massachusetts Institute of Technology, he practiced in this capacity for 10 years or more.

"Then in 1925 he turned his attention to banking, where he pursued the distinguished career in which he was widely recognized as an authority. But he loved birds and knew a lot about them. He was a gardener, too. His library reflected his wide interest in European travel and the art and music he found there. At various times he studied Spanish and Italian.

"But Fred Barker was concerned with none of these things except as they better qualified him to understand more deeply the world he lived in. His was a wide and generous sympathy for anyone anywhere who needed his help. This help was freely given. It usually availed mightily, too, for long experience brought with it wisdom."

Willis R. Salisbury of Minneapolis has retired from the active management of

Salisbury Company after 55 years. Willis is the third generation in the management of Salisbury Company, as it was founded in 1877 by his grandfather.

The mattresses were first stuffed with corn husks, as the first Salisbury was a farmer; after selling his corn he had his wife sew the ticking, which he stuffed with husks. They have come a long way since. Willis' two sons, William and Fred, are now operating the business. Outside of business, Willis has always been interested in working with young people; he was organizer of the Boys' Youth Club and also helped form the East Minneapolis Recreation Association for underprivileged children, serving on its board for the last 20 years. He has also been active in Masonry — was a charter member of University Lodge, Scottish Rites, and is also a 33d degree Mason. Active in the Minneapolis Kiwanis Club and the Minneapolis Athletic Club, he has served as president of both. As chairman of the board of Salisbury Company he will still keep his eye on things. — FREDERICK J. SHEPARD, JR., *Secretary*, 31 Chestnut Street, Boston 8, Mass. C. BOLMER VAUGHAN, *Assistant Secretary*, 455 West 34th Street, New York 1, N.Y.

## 1913

Another lapse has occurred and your Scribe will endeavor to bring you up to date on the happenings and news of the members of the Class of 1913. Your Correspondent, his wife, and mother-in-law have lately returned to these cold and snowy climes of New England from a 23-day auto trip to the always sunny and balmy state of Florida. We left the home station at Canton on the last day of January, following the East Coast down through Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North and South Carolina, Georgia, and Florida to our destination at Hollywood Beach. Several side trips were enjoyed and many old friends and classmates were visited. A most delightful overnight stay was made in Jensen Beach, Fla., with Maureen and Allen Brewer, where life may be enjoyed with fishing, boating, or just sitting. Many of the much advertised warm and citrus growing towns, together with true southern hospitality, surely warmed the bodies and hearts of the northern travelers. We were based at Hollywood Beach for six days, from which we made several side trips to Miami, Miami Beach, Fort Lauderdale, Deerfield Beach, and Delray Beach, where we were entertained by former New Englanders. The weather and temperature were ideal except for two and a half days of rain through the Carolinas and Georgia. The average temperature was 85 degrees or higher in Florida, and much of our time was spent in the Gulf Stream and the Gulf of Mexico.

On leaving Hollywood, with great regrets, we visited and enjoyed the Parrot's Jungle and other tropical gardens en route to the west coast by way of the Tamiami Trail. We traveled up the coast to St. Petersburg, meantime enjoying the good roads and tropical foliage.

age as well as the natives. Visited several other native-born Yankees now Floridians. Probably one of the high lights was the week end spent in St. Pete with our jovial and big-hearted classmate Les Gustin and his new wife, Ethel. These 1913 teens surely run in a definite pattern. To Gus, for ourselves and in behalf of the rest of the Class, we extend to him our most sincere congratulations; and to Ethel, a most welcome greeting to our "Fold."

After leaving St. Pete, we stopped and enjoyed the wonders of the Cypress Gardens, the Bok Tower, and Silver Springs. Another high light was the visit with Howdie Rand and his charming wife Esther. The same contagious smile and cordial spirit of our boy Howdie still prevail in St. Cloud, as in Boston. He has made a wonderful recovery; and as the result of the persistence of both Howdie and Esther, he can converse and walk around nearly as well as some of us other old bucks. He, with the help of his motor scooter, has become the pride and joy of nearly everyone in St. Cloud. Good luck, you dear Rands, and we hope that you both will enjoy life to the fullest extent in your new home, which is nearing completion. The trip north was enjoyable and was enhanced by a visit in Fairfax, Va., with "carpet baggers" from Franklin, Mass., to say nothing of the long anticipated visit with our daughters, and most of all with the first grandson. We have had it. We now have "sand in our shoes." So Florida, look for us in 1960.

It was a pleasure to receive a Christmas card and note from Andy Vogel during the holidays. Again, we revert to 1958 to relate that the Capen family enjoyed the hospitality of Frank and Flossie Achard at a party staged at their charming home, the last Sunday of the year.

It is always a very painful task for your Secretary to bring sad news. We have been informed by the Alumni office that two more of our beloved classmates have gone to their Maker. John P. Gallagher, Course I, 16 Hawthorne Street, Watertown, Mass., passed away July 30, 1958. Also, Allen W. Spicer, Course X, Claremont Avenue, New York 27, N.Y., joined the immortals on December 12, 1958. To their families we extend our most heartfelt sympathy.

Again we say this Class of 1913 surely is a nesting group. The *Quincy Patriot Ledger* brings to our attention that Heinie Glidden (Henry Orange Glidden) of 49 Colonial Hunt Drive, Abington, Mass., has taken unto himself another bride. This very important event took place on December 21, 1958, when Heinie was married to Miss Jane Blanche Doughty, 1106 Washington Street, Abington. The ceremony was performed at the First Baptist Church in Abington. The bride is a graduate of Abington High School, Bridgewater State Teachers' College, and Boston University. She is a teacher at Broad Meadow School in Needham and a member of the Needham Teachers Club. The groom is a graduate of Rindge Technical High School, Cambridge; received his bachelor of science degree and master's degree from M.I.T., 1913; and has retired as an

architect from the Turner Construction Company, Boston. After a wedding trip to Florida, Mr. and Mrs. Glidden will live at 49 Colonial Hunt Drive, Abington. Nice going, Heinie. We are looking forward to meeting the bride on Alumni Day. It is interesting to note that Grandpa has nine grandchildren.

Once again, it is our sorrowful duty to inform you the sad news that our very loyal classmate Nat Poor passed away in St. Petersburg on January 22, 1959, at his home on Snell Isle. Nat was a native of Danvers, Mass.; he attended M.I.T. and Lowell Technological Institute. He retired from the leather business eight years ago and moved to Florida, where he conducted a real estate business. His wife, Naomi M. (Derans) Poor died over five years ago. The Class of 1913 offers its deepest sympathy to the Poor family including: the daughters, Mrs. John J. Gallagher, Jr., of Danvers, Miss Gloria Poor of Beverly, and sister Raphael of Mission Sisters of Immaculate Conception in Houston, Texas; a sister, Mrs. Ernest S. Learoyd of Hartsdale, N.Y.; and three grandchildren. He was buried in Danvers, January 26. We are further indebted to Fred O. Stillman of Carteret, N.J., for further information concerning Nat's death as well as the facts: he was a member of the Masonic Lodge, the Bath Club of St. Pete, the Gulf to Bay Club at Siesta Key, and also the Army and Navy Club. Fred and his wife were entertained royally by Nat on a trip to Florida in 1956. Our trip to Florida was saddened, as we had expected to partake of the long promised invitation to visit him. May God bless his soul.

Again, we must relate the passing of another loyal member, and we quote the Boston papers: "Barnstable, January 30, 1959. Services for Edmund G. Brown of Main Street will be held tomorrow at 9:00 A.M. . . . in Hyannis. He died yesterday in Cape Cod Hospital. He was 69. A retired metallurgical engineer, he was a member of the Manhattan (atomic bomb) Project during World War II; he served as an engineering consultant to the Atomic Energy Commission until last March, when he retired. He was a graduate of M.I.T. in 1913 and worked in South America, Russia, Newfoundland, and Cuba. He served in compiling metallurgical terms for the latest edition of the Merriam-Webster Dictionary." He leaves his wife, Lydia (Baragina) Brown. To Mrs. Brown, we extend our deepest sympathy; and your and our loss can only be recompensed by knowing that Ed lived a very rewarding life.

Dave Stern wrote as follows: "From the current class notes, I see that you were recently involved in a pretty bad automobile accident. I am most happy to learn, however, that you have come out of it all right. It is best to give lady drivers the right of way. I hope to see you at Boston Rotary real soon." Thanks, Dave. My expectancy is 105.

Yes, again we announce a clipping notifying the writer of more misfortune to 1913. We regret to state that Ira W. Knight, manager of the research and development division of the Grinnell Corporation, died February 16, 1959, at Jane Brown Hospital, Providence, RI,

after a long illness. He was 70 years old. Knight graduated and received a master's degree in electrical engineering from M.I.T. in 1913. He was a prominent protectional engineer through his work with the National Fire Protection Association and had received many patents during his 40 years with the Grinnell Corporation. Ira Knight was a member of the President's conference on fire protection in Washington, 1947. Surviving are his widow, Christiana; two sons, Richard C. and Kenneth F.; and six grandchildren. The Class of 1913 offers to his dear family every condolence.

Well, our old work horse William Mattson and his charming wife Josephine were given a farewell party at the home of the city clerk and Mrs. Monte G. Basbas of Newton, March 5, 1959. Bill, as you know, has retired as vice-president of the American Locker Company; and the Mattsons are leaving our shores to reside in Denver, Colo. The people of Newton will miss Bill, as he has served on the board of aldermen for 12 years, as vice-president, and he has also been the chairman of the claims and rules committee. Also, he gave much of his time and energy to the Garden City as chairman of the republican city committee and the board of public welfare. Mayor Whitmore, Wendell R. Bauckman, President of the board of aldermen, and many other city officials join with us of 1913 in wishing Bill and Josephine all the happiness possible. Your places in our hearts and lives cannot be filled.

Now my lads and lassies we are looking forward to seeing you in June. Are you making your plans for the next 1913 reunion in 1961 and then the 50th in 1963? — GEORGE PHILIP CAPEN, *Secretary and Treasurer*, 60 Everett Street, Canton, Mass.

## 1914

Any '14 man who has not received the bulletins regarding our 45th reunion June 12 to 14 can have back copies by writing your Secretary. The final bulletin should be received by you about the time you receive this issue of the May Technology Review.

Word comes in from three Californians that the distance to Cambridge is a bit too great for them to make the trip this time. All three hope to make the 50th, however. Bill Simpson writes he may even be able to see us this year. We certainly hope so. Bill is retired and is living at Solana Beach near San Diego. Colonel Lucian Burnham is also retired and lives in Pasadena. Your Secretary visited him there a few years ago. He has a beautiful garden in which he takes a great pride, as he well should. Matt Harrison has been an inspector of materials at San Francisco but lives across the Bay at Oakland.

R. Howard Annin, another Californian, was recently honored as an outstanding layman of the Presbyterian Church. He has his own engineering firm and is a member of the Pasadena Presbyterian Church, where he has been a trustee for more than 20 years. He has served recently as head of the building committee which erected the new \$650,000 Presby-



terian headquarters on Wilshire Boulevard in Los Angeles. — C. P. FISKE, *President*, Cold Spring Farm, Bath, Maine. H. B. RICHMOND, *Secretary*, 100 Memorial Drive, Cambridge 42, Mass. H. A. AFFEL, *Assistant Secretary*, R.F.D. 2, Oakland, Maine.

## 1915

Have you paid your class dues? Just stick your check in that postage paid envelope and write a little news about yourself. Returns are coming in slowly but encouragingly. Do your bit for your class. These interesting notes came with the checks for dues.

Maurice Brandt, Salisbury, N.C., makes the interesting suggestion: "How about writing a letter for class notes to be returned in the postage paid envelope? I'll certainly be looking forward to our class reunion next year. How are the plans going?" The above is a good idea, and I may try it the next time I'm hard up for notes. Plans for our 45th in June, 1960, have begun, with Max Woythaler and Wink Howlett working on setting up a location. They've always done a banner job for the other reunions. Louie Young: "Having retired two years ago I have been so busy doing nothing that I haven't got time to do anything." (Figure that out, you English scholars.)

Orton Camp: "I am still working harder than ever at the plant trying to get back on our feet from the effects of the 1955 flood. I am sorry not to get to the New York class dinner." Orton refers to the terrible flood conditions in Waterbury, Conn., at that time. Helen Hall, writing for Al from Saco, Maine, says he still has his same old interest in M.I.T. and 1915. Ellis Ellicott, Jr., Chairman of the board, Ellicott Machine Company, Baltimore 30, Md., writes: "Regarding news about me and my family, I am still very much in harness and don't feel as if I were approaching 67. My family is flourishing: my daughter, Mrs. R. Martin Stevenson, living in Virginia with two fine boys and a girl; my son a doctor, married and with a daughter, practicing medicine in Lexington, Mass.; and the youngest daughter married and with a family of three in Baltimore. With best regards."

Earle Brown, San Francisco, whom we won back into the class fold after his visit here with his wife last Alumni Day: "We are looking forward to your visit with us in California some of these days. I hope our class has a very successful year. I am working on the Alumni Fund drive out here." Good for Earle. It certainly was pleasant to see him here after all these years. Ed (Phoebe) Proctor, Salisbury, N.C.: "I am still very active in our business and thoroughly enjoying the battle to stay alive in this dog-eat-dog textile chemical game of ours. I saw that you received an easy chair, which I hope you don't need for a long time." Ed refers to an M.I.T. Alumni chair presented to me along with an armful of beautiful roses to Fran at the December 9, 1958, meeting of the Northern New England section, American Textile Chemists and Colorists. I had just finished 17 years as secretary.

Ray Stringfield Fullerton, Calif.: "All quiet on the western front. Only excite-

ment was December 28 when I had a little heart attack that put me in the hospital for a week. Lucile didn't want to let me look at the pretty nurses any longer than that, so I'm back in circulation and feeling fine. Best regards." We're sorry to know of Ray's trouble and sincerely hope he has completely recovered. Maybe the pretty nurses helped. Charlie (Speed) Williams: "You know what to do with the enclosed dues check. Sorry no news that's printable." What a guy! Vik Enebuske, 383 Harvard Street, Cambridge 38, Mass.: "I've been fortunate enough to have been busy during the past years, but don't know how much longer it will last. I see Archie Morrison every now and then downtown."

George O. Eaton, River Road, New-castle, Maine: "Enclosed is check for 1915 class dues. Your class notes in *The Review* are more than worth the amount of the dues. In May, 1957, I retired as district engineer for the New England Electric System after 40 years' service. We make our home throughout the year at the above address and would be more than pleased to have any of our M.I.T. friends look us up. Best wishes to you and 1915 classmates." Seward Highley: "Being retired is one holiday that I enjoy. After a year I like it very much and find plenty to do: I get up in the morning with nothing to do and go to bed with only half of it done." Gardiner (Willie) Wilson, 227 Main Street, Mountville, Pa.: "I have been expecting you to visit me on a trip to this Pennsylvania Dutch country where, by now, I have retired with no more deadlines to meet (except possibly one more unavoidable one in a few years). I enjoy my small 'estate' and a sailboat not far away in the summer months. Hobbies like hunting, fishing, and woodworking keep me busy — otherwise it's a quiet retirement."

Just a break here to remind you all — whether you attend Alumni Day functions or not — to come to your class cocktail party, Monday afternoon, June 15, 4 o'clock, at M.I.T. Faculty Club, 50 Memorial Drive, Cambridge. You're all invited — no charge. Come visit with your old friends, families, and guests.

Before sailing for the Caribbean in March, funny man Bur Swain and his "associate" (wife to us) wrote: "How everybody pushes me around or wants answers to letters, and I have so little time to get things done as we sail on March 12. I am very happy to hear from you and agree that the New York class dinner in January was great. June in Boston is far away now. Everything is smooth and there is no snow to shovel. The only headache I see is a committee job for the replacement of a large church window; too many experts all around to advise me." We hope Bur and Joanne enjoy their cruise. He deserves it for helping Larry Landers put on that New York dinner so successfully, and Joanne deserves it for letting him out of her sight.

Gentleman Jim Tobey can really give it to you. From West Palm Beach: "In order that you may come to Florida this winter in your accustomed style, I am responding to your touching letter by enclosing some infinitesimal dues. After spending nearly three months in the land of the pirates on this Uranium, formerly Gold, Coast,

it is a wonder that I can dig up even this much. I imagine that no less than 76 classmates will call your letter a 'touching one. We haven't suffered much this winter, except occasionally from the heat, which has been around 80 degrees most of the time. Have been to the beach, to see the sun on, at least 20 times; whereas last year when it was so frigid we had been there just once up to now. I might have to hie myself to New York late in March to testify as an expert in a tax case. We expect to be here until the first week in April, so as to escape the snow, sleet, hail, rain, fog, and other features of April in New England. With all best wishes, and hoping to see you all."

Parry Keller lives at the University Club in Akron, Ohio, and for years, has been everything in, on, and about the club's monthly publication, "University Club News." For a richly deserved reward and appreciation for his steadfast service and skill over a period of 12 years, the board of trustees presented a "Tribute to Parry Keller." An attractive and impressive plaque, it carries a good-looking picture of Parry. Congratulations, Parry. He wrote, modestly never mentioning the above: "In spite of the unusually severe winter weather (lots of snow and cold) here in the Middle West, I have had no urge to go to some warm climate. I have managed to keep well and active; I enjoy the company of a lot of good friends here; I am close to my son and family, including three fine grandchildren; I like to read; and, I have enough interesting (to me) activities to keep me busy both physically and mentally. All of this in my case adds up to, and is, a simple form of life; however, I like it. I am planning to be in New England in June. My program will include Alumni Day at M.I.T. and a visit with the Macks. Whenever you are with any of the 1915 gang, say 'hello' to them for me. Please give my best regards to Fran. I hope both of you are well and things are going along all right."

Louie Zepfler, retired, certainly is enjoying himself: "I am pleased to enclose the usual check for dues — seems to me I also owe something for the memorial fund. Last August I went on the Grand Tour of Western Europe in a most interesting way. My doctor in Minnesota and his wife had me as a guest on a motor trip in a Pugeot. We went 8,000 miles through Switzerland, Germany, Austria, Italy, Spain, and France in two months. After that I went on my own through Belgium and England and Scotland. It was the trip of a lifetime. My French and German were very helpful. I had not been in France for 40 years — I was in Paris 10 months in 1918. The thrill is gone and the prices terrific — but only in France. I still divide my year between New Jersey (Cape May) from October to May and my Zephyr Lodge on Lake Minnewawa in McGregor, Minn., the rest of the year. There my garden takes up most of my time. My son — Tufts'51 — is married with three children. He is personnel manager at Teppers Department Store in Plainfield, N.J. My daughter is active in her husband's business of building swimming pools in New England. He is J. P. Flanigan with offices in South Sudbury and a lovely home in South Lincoln."

I'd like to be able to answer all these splendid letters personally, but really it's impossible. However, please know I appreciate you and your families' writing these interesting bits about yourselves, and I know all our classmates join with me in enjoying reading them. You will note from these interesting letters the number of our men who have retired and also the common feeling that they like it and are enjoying it. In fact, Louie Young's and Seward Highley's read almost word for word on the same theme. Maybe it won't be too tough to take for the rest of us.

Our notes recently carried the sad news of Howard King's passing. It's a tribute to him, now, to quote from some of the glowing obituaries in the newspapers and trade journals at the time of his death. We've lost an outstanding classmate. "At the time of his death, Mr. King was vice-president and chief engineer of the Mason and Hanger-Silas Mason Company, 500 Fifth Avenue. He was named Metropolitan Civil Engineer of the year in 1957 by the metropolitan section of the American Society of Civil Engineers. A graduate of City College with a master's degree from Columbia University and an engineering degree from Massachusetts Institute of Technology, Mr. King worked on construction of the Holland Tunnel from 1921 to 1928 as shift engineer and resident engineer for the New York and New Jersey Bridge and Tunnel Commission. He joined Mason and Hanger-Silas Mason Co. in 1928 and worked as resident engineer on the Fulton Street and Rutgers Street subway tunnels until 1935, when he became chief engineer. A dam builder as well, Mr. King was chiefly known for his engineering design work on the Lincoln Tunnel, the Brooklyn-Battery Tunnel, and several New York City subway projects. He was considered an expert on subaqueous tunneling under compressed air. During World War II he was project manager in the construction of two large War Department ordnance plants in Virginia and Wisconsin.

"In the immediate postwar years, besides finishing the Brooklyn-Battery Tunnel, Mr. King was chief engineer in an advisory capacity on four subway extension contracts on the I.R.T. Lexington Avenue Line, in partnership with the Arthur A. Johnson construction engineering firm. In 1955 Mr. King went to Duesseldorf, West Germany, to confer with city officials there on plans for a tunnel to carry sewage mains under the Rhine River. He also worked on the Van Wyck Expressway and the 60th Street tunnel connections on Long Island. An honorary member of the engineering alumni of City College, he was also a member of the American Society of Civil Engineers; Gamma chapter of Phi Beta Kappa; the Engineers Club; and the Moles, an organization of men engaged in heavy underground construction. He received the Moles 'distinguished service' award in 1956. Surviving is a daughter, Mrs. Marion King Schleffer."

I hope to see many of you with your families and your guests at the class cocktail party, June 15. Pay your class dues and "help Azel." — AZEL W. MACK, *Secretary*, 100 Memorial Drive, Cambridge 42, Mass.

## 1916

We start off with a now well-known item about Vannevar Bush — his election to the post of Honorary Chairman of the M.I.T. Corporation in December. The January Technology Review had a fine picture of him along with a picture of James R. Killian, Jr., '26, the new Chairman of the Corporation. If you have not read it, we are proud to refer you to page 130 of the January issue.

We now have two what might be called vigorous items: 1) Ralph and Sibyl Fletcher left early in March for their skiing sojourn in the Swiss Alps, so Jim Evans tells us, having seen them off at the airport; 2) (How about this?) Jap Carr and his partner won the men's doubles in Palm Beach, Fla. This happened on the week end of February 28 to March 1 at the Bath and Tennis Club of Palm Beach, and his partner was Johnny Van Ryn. You may remember the note from him in last month's column in which he pointed out that last year he had lost a hard one in the Palm Beach Bath and Tennis Club with "Johnny Van Ryn, the old Davis Cupper, as one of his opponents." Seems as though this year they decided they should be on the same side of the net. Jap has always said it was needless to say he picked good partners, and this time he says that anyone who starts off with Johnny Van Ryn "starts off on the right foot." The *Palm Beach News* reports it this way: "A strong serve and finishing shots of Mr. John Van Ryn and the steady playing of Mr. J. B. Carr defeated Dr. A. W. McGee and Mr. L. P. Holmes in a hard fought 6-4, 6-4 match for the men's doubles championship." Jap has been known to say that he doesn't get honorary degrees, make scientific discoveries, publish articles or books, and so forth; at prep school his athletic prowess was limited to the third football team, but note — here and now — 50 years later — he wins a tennis tournament. Florida, Pennsylvania, M.I.T., and 1916 men whose backs hurt when they shovel snow, acclaim him.

Steve Whitney sends us and Jim Evans brings us a firsthand report of the March 2 dinner at Josephs at Newbury and Dartmouth Streets in Boston. Ralph Fletcher and his good assistant Bob O'Brien spread the invitations far and wide. The roster included Joe Barker, Sandy Claussen, Bob Crosby, Bill Drumme, Jim Evans, Ralph Fletcher, Dick Hunneman, Emory Kemp, Bob O'Brien (honorary member), Izzy Richmond, Harold Russell, Hy Ullian, Steve Whitney, Bob Wilson, and Jack Woods. Jim was glad to report that Steve and Louise Berke were recovering from their serious auto accident. Of significance was the fact that Dick Hunneman left a Harvard meeting to attend the dinner. Jim said something about Dan ('17) Comiskey's not being there — ask Jim what it was. Steve Whitney mentions that Ralph and Sibyl Fletcher were not only just taking off for skiing in the Alps but had only recently returned from skiing in South America. Steve reports another granddaughter who makes five, from 14 years on down. As he wrote (March) he was up at his Meredith, N.H., home to rent some of his houses

at "Whit's End." We're glad to report that he is mending after a fall on the ice in which he broke a couple of ribs.

An interpolation: a little bird told us that Ralph Fletcher was made a director of the Union National Bank in Lowell at the turn of the year.

Walter Littlefield comes across with a reply but says there's no news. Asks Walter: "Should I rob a bank or shoot a crooked politician for you? Don't tempt me with a 'yes.' Sorry you have a 'dry hole' here, for your letter brings tears to my eyes and I'd help if I could. You're doing a grand job." Every little bit helps — it's the "no reply" that is difficult to handle editorially.

Gene Barney says he enjoyed reading the February notes to such an extent that he's contributing his bit: "Retirement so far has been more enjoyable than I anticipated because I seem to be kept quite busy with church and civic affairs interspersed with enough travel to prevent monotony. Mrs. Barney and I have just returned from a trip to Mexico, where we visited Mexico City, Orizaba, Fortin, Cuernavaca, Taxco, and Acapulco. We just missed Eisenhower by a few days, which was probably fortunate or we might have been crowded out. We recommend a trip to Mexico very much but prefer the Caribbean." We'll ask Bob Wilson in particular to note carefully what you say, for it is well known in and around our reunions that his travel plans have been favorably influenced by the travel recommendations given in our column.

Your Secretary, who spends part of his time teaching at Rutgers University, has just learned of a kindred spirit: Brad Curtis of Course VI, who has been teaching electrical engineering at Newark College of Engineering since he retired in 1956. Brad says he retired from the Jersey Central Power and Light Company in Asbury Park after 31 years with that utility. He had planned at retirement to build a 26-foot boat ketch size, had his plans all drawn, and had a shop that was willing to help him on the hard parts. It was to have been one of those do-it-yourself projects in the back yard, something he was good at. But the opportunity to do some instructing in electrical engineering came along, mostly on electric machines, motors, transformers, and so forth, and he has been at it ever since. Says the work is not too heavy four days a week; he has a real vacation in the summer (hear, hear!); and as for the boat, "It will have to wait." Brad and Mrs. Curtis have two married daughters, four grandchildren (the oldest 15), and live in Interlaken, Asbury Park, N.J. They are both from Massachusetts and like to take trips up that way, mostly in the summertime. Hobbies include sailing — he did have a flat-bottom sharpie that he sailed on Barnegat Bay and expects to get back on the water again, working in wood, and refinishing furniture.

We often speak of old reliables — meaning reliables in the sense of being among those who practically always answer a call for material for the 1916 column. Dave Patten is one; and in reply to a request sent to South Duxbury, we have word from him from San Diego, Calif.



Dave says: "This is the sixth of periodic trips to the West Coast, home of my forebears, since the war and made primarily in the interests of personal and family business—from the '49ers to the '59ers. Since Emory Kemp, who I'm glad to learn is on the mend, released a portion of my letter to him for use in the January '16 notes with the designation 'words of wisdom,' I am considering Admiral Rickover's idea of a copyright on future expositions. The purpose was served if Emory got some diversion from it; but wisdom is prudence and in this great new era of regulated economies, budget deficits, and the like, that's outmoded. Only the prognostications of the researchers are popular in the market place or where the erudite gather. One day the earth is pear-shaped and solid and the next it is supposed to be bulging at the waistline like most '16 men and similarly liquid within. Cal Coolidge had the right idea when he said: 'I have never been hurt by anything I didn't say,' but that was in the days of silent movies. On the subject of Coolidge, that nearly last of Republicans: while out here in the great state of California, of Nixon, and of Knowland, where the grass once looked greener but is now Browne, I have been digging in the ruins of that once great party in search of some bomb fragments with which to identify the assassins. Of course, one of these has reluctantly hidden himself away in the ancient hills from whence Cal came, to add another chapter to the Dead Sea Scrolls. I suppose, however, that when we again rest calloused elbows on the Chatham Bar we can console ourselves with the thought that these trying times are the good old days we'll be longing for a few years from now." Thanks Dave. The cartoon you sent will be mounted on the display board at the Chatham Bar that you mention.

We have clippings from Lowell and Woburn newspapers telling of a retirement party at the end of January for Fred Spencer, to be held in the Old Belfry Club House in Lexington. At his retirement Fred was manager of plant services at Radio Corporation of America's Burlington engineering plant. "He was with the Barber Asphalt Corporation in Barber, N.J., for 21 years; General Cable Corporation in Perth Amboy for seven years; and joined R.C.A. in 1947 as service superintendent in Camden, N.J. He became manager, plant engineering, in Moorestown, N.J., for R.C.A. in 1954. Shortly before R.C.A. moved into their new Burlington Engineering Plant, Mr Spencer transferred to Massachusetts to assist in the opening and operation of the new engineering facility. He now resides in Arlington."

It's hard to get Steve Brophy to talk about any of his many activities, but acting the part of a consistent nuisance (a secretary's prerogative) we have at long last been able to get a bit of a story and some observations from him about his trip around the world with his wife in 1958 after he retired. They sailed from San Francisco by American President Lines *S.S. President Jackson*. Traveling by the great circle route to Japan, they were fortunate in being able to see the Aleutians on the way—usually fogged in most of the year. "A beautiful sight—jagged

peaks of ice and snow—like Switzerland at sea!" Of Japan, Steve says: "An amazing country, more 'Americanized' than any other we visited. A most interesting blending of the very old and the very new: more neon lights on the Ginza in Tokyo than on Broadway." And here's an unforgettable observation: "The Japanese worship success. To them we are great people because we beat them. They want to be like us—and win." From Tokyo they went by air to Hong Kong—jet-propelled air. "Wonderful plane service all around the world. Hong Kong is the shopper's paradise—a free port with cheap, very cheap, labor. Millions of refugees from China.

"Saigon, Singapore, Bangkok, Cambodia, Penang were all visited in that order. Angkor Wat in Cambodia—a city the size of Washington, D.C., buried for 700 years in jungle wilderness until the French discovered it and dug it up, 1900 to 1940—is amazing. The temples of Bangkok are beautiful beyond description." Jessie interpolates that they attended a party in Bangkok given by the Danish ambassador celebrating the King of Denmark's birthday. "Had a half hour's chat with the Soviet ambassador—a smooth, smart chap." And now we are going to save the rest of Steve's story for the next issue: what they did, saw, and had to say about Ceylon, India, Greece, and Turkey.

We regret to report the death of Robert A. Miller in Natrona Heights, Pa., on January 11. He was a graduate of Yale before coming to the Institute, where he majored in chemical engineering. As reported in the *New Haven Sunday Register*: "Mr. Miller was associated for 35 years with Pittsburgh Plate Glass and had been retired from the company since August 1, 1956. After five years as assistant superintendent in the company's glass plant at Creighton, Pa., he was transferred to the general office in Pittsburgh, where he became technical sales engineer and worked in the company's Product Development Department from the time of its organization. He made many important contributions to the glass industry in the field of chemical engineering and played a major role in the development of Herculite glass. Mr. Miller was a member of the American Chemical Society, the American Society of Mechanical Engineering, the American Ceramic Society, the Illuminating Engineers Society, and the American Society of Heating and Air-Conditioning Engineers. He was also a member of the Society of Automotive Engineers, committee which developed the safety glass code for automobiles." He is survived by his three sons, a brother, a sister, and six grandchildren.

This is probably the last issue you will receive before our 43rd reunion comes off, June 12, 13, and 14 at Chatham Bars Inn on the Cape at Chatham. Already (and it is only March 14) Ralph reports substantial evidence of better-than-ever attendance for an in-between reunion, the kind we've been having every in-between year since our 35th in 1951. The food at the Chatham Bars Inn is excellent, the atmosphere restful, the golfing good, the company tops, and the ladies are invited again. It will be just one more of those occasions you can't afford to miss. Fi-

nally, please continue to send in bits and bundles of news items of interest, and see you at Chatham!—HAROLD F. DODGE, Secretary, 96 Briarcliff Road, Mountain Lakes, N.J.

## 1917

Not infrequently, studies made for a college thesis become the basis for a lifelong interest. The *Northampton* (Mass.) *Independent* reported on one such case in its issue of December 22, 1958, as follows: "Since 1917, when he made performance tests of the Stanley Steamer automobile power plant for his senior thesis at M.I.T., Colonel J. Worthen Proctor has had a keen personal interest in steam power. As a mechanical engineer, and through his subsequent 33 years in Army Ordnance Corps and the seven years since his retirement in 1950, Colonel Proctor has collected published material and pictures about steam engines. They supplement his own considerable experience and knowledge of that far from outmoded source of power which generates about 80 per cent of the electrical power consumed today. During his career in the Army, the colonel had supervision of many steam locomotives at the arsenals he commanded and regrets their disappearance from the railroads. Among his souvenirs of that era is a picture of the Union Pacific 4,000-class steam locomotive called 'Big Boy'—designed by a friend—which was the first to take a 125-car freight over the terrific grades of the Wasatch Mountains between Ogden, Utah, and Wyoming. Some of the methods of generating steam and its uses are outmoded, but Colonel Proctor is enjoying observing the increased use of the high pressure super heated steam operating principle (used by the Stanley twins) being utilized to meet today's rapidly increasing demand for power."

Retirement activities of members of our Class vary considerably as you will note from the examples which follow:

Under the heading "M.I.T. 1917 Civil Engineering Grad Retires," a news release reads as follows: "Philip N. Cristal, manager of transportation and municipal investments for the Northwestern Mutual Life Insurance Company (of Milwaukee, Wis.) will retire February 28 after 25 years of service with the firm. Cristal will continue to engage in financial counseling, with activities embracing problems and projects of a financial and operational nature in various fields of transportation. His new work will deal with the origination and direct placement, with institutional investors, of transportation and other types of investment securities. He will initially locate in Philadelphia, and on May 1 will have an office in the financial district of New York City as a partner of Cristal and Maine Associates.

"Cristal has served on the city of Milwaukee Public Debt Commission and on the boards of the Milwaukee University School Foundation, the Milwaukee Blood Center, and the Planned Parenthood Association of Milwaukee; and he was recently named a trustee of the new Marine Historical Society of Milwaukee County."

Potts Mehaffey writes from Beaufort, S. C.: "Yes, February 12 did mean that

I must hurry up and put in my claim for Social Security. Also 'I know why my life has been spent, because my git-up-and-go has got-up-and-went.' It has been a cold winter down here. Both my wife and I have spent a bit of time in the U. S. Naval Hospital but seem to be over the hump, I hope."

George W. Donovan writes: "Retirement is compulsory with our company (Monsanto Chemical Co.), so I am taking off May 1. After about 42 years of work, I have had enough and have turned down offers of other jobs including consulting. I have been with Monsanto a long while, chiefly in the new construction phase in some of our larger plants. I am presently here in our Texas City plant as manager of construction, where I have put in quite a few million dollars' worth of new units.

"Both Mrs. Donovan and I enjoy excellent health and we are looking forward to some years of leisure and continuing pleasure. We never had any family and so have no ties. We both love to travel and have, up to now, been in every state in the U. S.; through a lot of Canada; and, naturally from here, all over Mexico. Next August we are starting on Europe, leaving on the *Queen Elizabeth* for our first trip of about three months. After returning home, we are going for a month to the Florida Keys, which we like, to fish (which I do quite a little of) and look around a bit more closely. Being from New England, I am torn between the two places. We will be on the Cape a while before August, but we are afraid of the winters. We feel we finally will locate on the Keys and summer on the Cape, with travel worked in during some parts of the year. If you like salt water, which we do, the Florida Keys are really something."

The retirement deadline means nothing to Kenneth M. Childs, since he writes: "As things are now, I'm going to continue much as though I were reaching 21, only maybe with a little less pep. Here at Carter's (The William Carter Co.) where I have been for 35 years, we have no compulsory retirement age. And as long as I continue in good health, I should have a few more good years. I do find, however, that I am devoting more time to training the younger fellows in our merchandising divisions so they can take over when the time comes. For the past 20 years I have been in merchandising, and for some time have been manager of our infants' division. We make the famous Carter's underwear for the entire family.

"With our daughter and two grandchildren in Virginia, we plan two or three trips there each year. Our son and two grandchildren live in the Boston area. Since graduating from M.I.T. in 1952, he has spent a number of months in Belgium in dry dock construction. On his next trip we may have an opportunity of visiting Europe again. Our vacations are usually spent in traveling; and as I am quite interested in color slides, I have a fair record of our visits, especially the western national parks. Our annual sales convention is at Miami Beach next month. Won't that tend to keep me young?"

Here is another engineer who has become a farmer. George P. Igleheart writes from Greensboro, Vt.: "Yes, I did retire at the usual age, last August, and am

living up here on a dairy farm, in which I have an interest. My son and son-in-law work the farm and make a living from it. I just work when I feel like it. I still do a little consulting work and attend directors' meetings. The freedom from day to day responsibility is certainly agreeing with me. My last few years in business were extremely busy ones, involving a great deal of travel; so it is a welcome change to stay put most of the time. In this Vermont winter there isn't much temptation for an oldster to move around much, though we are not far from Stowe and other ski centers.

"My family of four married children and 13 grandchildren contributes to the fun of life. I enjoy woodworking and occasionally interfere in the farm work. Altogether I recommend this life highly. If any of our contemporaries have an interest in this part of the country, I will be glad to tell them some of my pitfalls and pleasures. Greetings to all from the snow country."

News has been received of the death of another of our classmates, Sidney S. Batchelder, on February 20, at his home in Dedham, Mass. Sidney was 63 years of age. He was engaged in operating a wholesale and retail oil and gasoline business in Dedham, which included some work in heating equipment.

Stan Dunning planned a midwinter get-together for 1917 classmates at the Faculty Club in Cambridge on the night of March 6. He expected about 20 would be able to make it from the vicinity of Boston, New York, and points in between. Actually the elements intervened with a rainy, snowy, windy night which kept all but nine from attending. Stan reports as follows: "A small group of the Class met for a pleasant evening on March 6 at the Faculty Club in Cambridge. Those present were Ray Stevens, Ed Tuttle, Art Dickson, Heine Gartner, Jack Platt, Brick Dunham, Al Lunn, Rudy Beaver, and your Assistant Secretary. The informal gathering resulted in an exchange of activities with retirement being a not unheard topic. Ray Stevens was back with a healthy hue, which he characterized as a very expensive sun tan. Al Lunn told of his activities in connection with his job as chairman of the Alumni Association National Nominating Committee. According to Al it is far from a rigged deal that has sometimes been suspected."

The retirement of Kenneth B. Toye is reported from the New England Telephone and Telegraph Company on March 31. It is understood that he will reside in Laconia, N.H.

The *Seattle* (Wash.) *Post Intelligence* under recent date—in early March—ran the caption, "Small Business Chief Installed." Beneath the caption was the picture of a very substantial man with right hand raised. The article read: "Neal E. Tourtellotte became administrator yesterday of the regional Small Business Administration, which now has outstanding 1,100 loans totaling 51 million dollars. In brief remarks afterward, Tourtellotte said: 'I am happy to follow in the footsteps of Robert F. Buck, who has been promoted to national director of the Office of Loan Administration, Washington, D.C. The Small Business Administration

is vital to the growth of the Pacific Northwest and the new state of Alaska! Seattle Region 13 administers federal loans in Washington, Oregon, Idaho, Montana, and Alaska. It processes about 60 applications and grants about 40 loans monthly." Congratulations, Neal, on becoming constructively active at the retirement age.

Two Smiles are offered: the first from the Monterey (Calif.) *Peninsula Herald*; "Miss Roberta Ford was injured while driving a car near the city, yesterday. The area in which Miss Ford was injured is spectacularly scenic." And another: "The corporal met a lovely little gal in a southern town. 'Gee, that's a nice dress you have on!' was his remark. 'Sho nuff?' was her answer. 'It sure does!'" —W. I. McNEILL, *Secretary*, 107 Wood Pond Road, West Hartford 7, Conn. STANLEY C. DUNNING, *Assistant Secretary*, 21 Washington Avenue, Cambridge 40, Mass.

## 1918

Somehow seeds and bulbs always know in which direction to grow. I have an idea that men do too, if they are let alone. Bill Wyer got himself a combination of information now of great value to him. First it was M.I.T., then it was the Harvard Business School, then a law school in Cleveland, Ohio. Armed with all this educational superphosphate he has grown from a clerk in the 1919 U.S. Railroad administration to one of the country's leading railroad consultants. His office is now studying the consolidation of the Lackawana, the Erie, and the Delaware and Hudson in the hope of cutting down overhead. He is also working on a review of all the branch passenger service which loses the New Haven so many millions per year. Bill went to the Brussels Fair last summer. He was disappointed by the United States exhibit, which he says showed little overall planning and conveyed a poor idea of what life in America is really like. He has moved his office to Upper Montclair, a more swanky location but 48 miles from home and varying amounts from his four grandchildren.

John Poteat got himself a bachelor of arts degree from a university in South Carolina before the currents within him started running toward electrical engineering. When the growth of that idea had reached full maturity he had become general manager of the Electric Range Department of the General Electric Company at Louisville, Ky. He is retiring this year, in anticipation of which he has built a house in Tryon, N.C. So far the tendrils of this growth have reached out to include a son in the University of Louisville Law School, two grandchildren, the vice-presidency of the local community chest for cultural activities. His ambition now is to share all this accumulated experience by lecturing to small colleges on the advantages of the capitalistic system. At present he discusses economic principles and the financial picture once every three months with his 1,100 employees.

Eli Berman has grown in a full circle from student, to business man, to professor. Times change, and we with time. When the march of progress tore down the building which housed his main store, when the big demand for radios and tele-



vision sets slacked off, he let the boys run the business and started teaching electric circuits at the Wentworth Institute. Harold Collins decided from the beginning that the trellis he was going to climb was administrative, and he took Course XV. So far he has climbed up to vice-presidency of the Metals Disintegrating Company of Elizabeth, N.J., the largest producers of metal powders in the world. These are used for paint, gasoline filters, clutch faces, powder metallurgy, and such. Another business he owns some stock in has gone to his head. It is called Tint-Air, the secret of keeping black hair from turning grey. "Nature is not always right," says Harold, "but Tint-Air is." Alas, so athletic and handsome a man has no children. Cousin Lovejoy lives in Newton where he grew up and has three children. The saga of his growth must wait until another time. — F. ALEXANDER MAGOUN, *Secretary*, Jaffrey Center, N.H.

## 1919

A nice card from Roger T. Hall, with some kind words about the news notes. Thanks, Roger! He says he has no particular news to send us, as he has seen nobody from '19 and his own activity is still confined about 100 per cent to his construction business in Washington, D.C. He does mention that he recently had a nice week end with his brother Dan, whom many of you will remember, and that Dan brought along a carful of grandchildren to show off to Roger's side of the house. Roger hopes to attend the reunion in June, and we surely hope he makes it. His regards to all of you in the meantime!

L. A. Gillett writes from Norfolk, Va., that since his retirement, with disability, from the Virginian Railway Company last August, he has been living a life of leisure. Says, too, that he has never been able to get to one of our reunions but hopes and expects to be with us all at Wentworth-By-The-Sea in June. See you there!

In response to the reunion card sent to William C. Haddock, Jr., we received a note from his son, William C. Haddock 3d, telling us that Bill had passed away suddenly on September 8, 1956, during a routine health checkup at the Abington Memorial Hospital. He left his widow, Bill 3d, and a daughter, Mrs. Richard V. Hare of New York City. I know that you all will be sorry to learn of Bill's passing.

Change of address news: Morris Berk has moved from Brookline, Mass., to 71 LaGrange Street, Chestnut Hill 67, Mass. And John O. Merrill has left Chicago for 101 Gardner Place, Colorado Springs, Colo. Sandy McMorran'21 is now at Box 75, Boxford, Mass.

Now here is the news, up to this writing on March 13, on cards which you have sent in about attending the 40th reunion. Coming are: George Michelson (God willing, he says.); Will Langille (who writes that he and McCreery, Richards, Kimball, and Way had an enjoyable sample reunion in Boston on February 20); Wirt Kimball (who says, "Our son Clark graduates from the University of Maine June 7, with B. S. degree in electrical engineering. We'll be there to see him graduate and the following week end we'll be

at the reunion. Regards to all!"); Milton A. Loucks (said he hoped wives are included—You bet they are, Milt—and adds that he has been looking forward to the reunion for the last five years.); Ed Moody (who says they'll make it for Saturday and Sunday. And by way of other news says he now has nine grandchildren. He's currently president of the New Hampshire Folk Federation.); and Arthur H. Blake (who says he expects to be there for at least one day and will try to do even better). The following didn't send me any news notes, but we are glad to hear they will be at the reunion: Karl F. Rodgers; Eaton Webber; Harry Mardoian; E. Mirabelli; Arthur C. Kenison; Ray H. Bartlett; Bill Banks; L. R. Sorenson; Leighton B. Smith; B. H. Bristol; Don Way; and yours truly E.R.S.

Those who will be there if they can are: Paul W. Blye (who says he's sorry he has nothing else new or exciting to send along as news. "Same old grind," he says.); George R. Bond, who has to be at M.I.T. on the 12th, as his son-in-law graduates from M.I.T. on that date. Wilbur S. Burbank says he has settled in Exeter, is semi-retired and working part-time for Geological Survey. If he's not out West on a field trip he will surely get over to the reunion. No news notes from these classmates, but they hope to get to the reunion: James Holt, Russell Savage, John Stevens, Earle Richardson, Joseph Higgins, Daniel H. Brown, Harold F. Marshall, Herbert Best, Jim Strobbridge, and Sandy McMorran'21. Hope you will ALL be able to attend!

The following boys don't believe they can make it, but we hope that time and nostalgia will change their minds before June, and that they will all be with us in New Hampshire. Leslie A. Jackson, writing from Little Rock, Ark., says: "Too far, and too busy." Hosmer Jones adds to his card the news that he retired last June after 33 years of public school teaching in industrial arts. Art Page says he just can't make it, has retired to "the land of warmth and sunshine, Hollywood, Fla." He adds that he is now living to enjoy living. He tells me, too, that there is an M.I.T. Club of South Florida. Frank Reynolds says he's sorry that he can't be with us, but he and Mrs. Reynolds expect to be in Hawaii at the time of the reunion. Charles W. Hyde adds the information that he is now "on the ninth grandchild." Fran Weiskittel, who is now a widower and has three youngsters 10, 12, and 13, has plenty on his hands and will be busy with shipping the children off to camps about that time; but he still will try to make it. We'll be looking for you, Fran. Edward A. Richardson says that he has nothing of consequence to report other than that a heat transfer patent application of his has been allowed. Will Bennett unfortunately has a business convention which he must attend on the dates of our reunion. Sorry, Will. Dean Webster is very sorry that he can't be with us, but he and the Mrs. leave on an extensive European tour on May 26. He says he hopes that we have a fine crowd. We'll miss you Dean, but have a good trip.

Also among the doubtful are: Gustave Levy; George Kahn; Willis Brown; Phil Thompson; Carl G. Polson; Jim Howe;

Leo Beaulieu; Alex Wiren; Ken Wright; Merritt Smith; Leon Weaver; Edgar Smith; John Meader; George Hirsch; John Coldwell; Jim Strang; T. E. Shea; Bill Osgood; Elisabeth Coit; John Carter; Bertram Southwick; L. M. Quick; A. L. Warren; Annan Cook; and Jacob Carter, Jr.

Make a real effort to be there, all of you. We hope to see you at Wentworth-By-The-Sea June 12 to 14. Come on, boys.

Cards were returned by the post office on latest addresses we had for the following: What's your correct address? ? ? ? Lawrence C. McCloskey, Fred E. Claffin, George A. Irwin, and Bernard S. Moore, Jr. Please write and let us know. — EUGENE R. SMOLEY, *Secretary*, The Lummus Company, 385 Madison Avenue, New York 17, N.Y.

## 1920

A recent news bulletin of the New England Telephone and Telegraph Company announces the appointment of Jimmy Moir as chief engineer. The bulletin contains an excellent picture of Jimmy and I must say he looks very distinguished. Jimmy has been with the Telephone Company ever since he graduated. He was previously assistant chief engineer and before that, state engineer.

Archie Cochran has been in the news as one of the incorporators of the Louisville River Area Foundation, a group that has been formed to develop and improve the Ohio River front. Archie is president of Anaconda Aluminum Company and of Trees, Inc. He is referred to in the newspapers as a leading figure in organizing the foundation and endeavoring to see it developed as one of the great playgrounds of the Ohio Valley instead of letting it become shabby and run-down.

We hear that Frank Bradley has left New Jersey and has become associated with Stone and Webster Engineering Company in Boston. We will believe this when Frank gets in touch with us, as we hope very much he will. Ed Zahn has moved from Flushing, N.Y., to Halifax, Mass. Edith Swaine has moved from Des Moines, Iowa, to Milwaukee. Dr. Alton S. Pope is presently in St. Petersburg, Fla.; but whether this is for the winter only, we do not know.

A nice letter from Frank Hunt chides me gently for giving misinformation in the January notes. He says his correct permanent address is 1528 Northeast 16th Avenue, Ft. Lauderdale, Florida. He goes on to say that contrary to my implication that he was just down there sunning himself, he recently acquired a house that had been in disrepair so that for several months he has been painting and carpentering. He promises to try the sunning once he gets the house fixed up. Frank says he expects to spend the summer months at Boothbay Harbor, Maine, and he expects it to be colder there in the summer than it is in Ft. Lauderdale in the winter but thinks he can stand up under the change. — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

## 1921

Last call to attend our informal class gatherings at luncheon and dinner on

Alumni Day on campus in Cambridge, Monday, June 15. Word has arrived to the effect that the morning program for that day of stellar events will include the inauguration of Julius A. Stratton'23 as the 11th president of Technology. For the second time in our lives, we are to see an Alumnus of the Institute elevated to high office as the chief administrator of our alma mater. We are particularly happy that it will be a "family" affair, not only for the personal pleasure it will afford to all of us on June 15, but also because it demonstrates the down-to-earth, human approach reflected from the top throughout the entire Institute staff; always friendly, direct, and effective with a minimum of academic pomp and circumstance. You owe it to our beloved Chairman of the Corporation, Jim Killian'26; to Jay Stratton'23; to Technology; and to yourself to be present for the ceremonies. Bring your wife, family, and guests to enjoy a full day of intensely interesting events, an opportunity to see your 1921 friends and to relive our own days on the banks of the Charles. The delectable dessert will once more be an evening concert by Arthur Fiedler and the Boston Pops Orchestra in the comfortable and acoustically perfect Kresge Auditorium. Write to the Alumni Association now for tickets.

We are preparing these notes in anticipation of the marching in the St. Paddy's Day Parade on March 17 of some (appropriately) 17 members of the Class of 1921. We will end up at the New York Yacht Club as the luncheon guests of Irv Jakobson. The luncheon is another in the series of planning meetings to insure that the program of events for our BIG 40th reunion in 1961 and its timing, to coincide with the celebration of Technology's 100th anniversary that year, will be so attractive as to impel you to plan now to be there two years from now. You may wish to start at this time to contact all your friends in the Class—coursemates, fraternity brothers, and others—and arrange with them to travel or live together again for these few days; this is an opportunity to meet which may never come again. Among those expected to give of their counsel and aid at Jake's session in March are Mich Bawden, Cac Clarke, George Chutter, Liz Gatewood, Zam Giddens, Dan Harvey, Sumner Hayward, reunion chairman Mel Jenney, Bill Kennedy, Gus Kinzel, Moose LeFevre, Joe Morrell, Ray St. Laurent, Art Skilling, Joe Wenick, and Dick Windisch.

Class President Ray St. Laurent advises that there was a good 1921 turnout at the Alumni Council meeting on the evening of February 16 in Cambridge. Present besides Ray were Jack Barriger, Mich Bawden, George Chutter, Frank Kittredge, Chick Kurth, Ace Rood, and Jack Rule. Jack Rule gave an interesting talk on "The Changing Face of Campus Life." Jack Barriger reported that his son Jack, M.I.T.'49 and Yale'50, is trainmaster for the Sante Fe in Los Angeles and younger son, Stanley, M.I.T.'55, Yale '56, is a trainee with the New York Central—both following Dad's lead and, we hope, equally successful. The following noon, a 1921 luncheon was held in the Faculty Club at the Institute to discuss

40th reunion plans with Bob Kimball'33, Secretary of M.I.T. Ray presided and others in attendance included Mich Bawden, Josh Crosby, Irv Jakobson, Mel Jenney, Chick Kurth, and Larc Randall. The agenda comprised basic items of organization, ways and means and communication for the ultimate objectives of maximum attendance in 1961 and a high degree of participation of everyone in the Institute's centennial year.

Ray and Helen St. Laurent are planning a trip abroad again this year, flying over to Ireland at the beginning of May and spending some time in southern England as you read this. They expect to leave Southampton at the end of the month for a leisurely boat trip to Montreal, arriving in time to be in Cambridge for Alumni Day. A. Royal Wood, Vice-president and Treasurer, United Illuminating Company, New Haven, Conn., was the speaker at the February meeting of the Connecticut section of the American Institute of Electrical Engineers in Hartford. Woodie presented a discussion of the problems facing a financial officer in raising new capital funds. In an article in the *Wall Street Journal* on recent considerations of merging all Eastern railroads into three or four huge systems, John W. Barriger, President of the Pittsburgh and Lake Erie Railroad, is quoted as favoring the consolidation of all 220,000 miles of American railroads into no more than 20 systems, in order to give better service and reduce operating expenses.

Bill and Anna Wald sent a card, beautifully illustrating the lovely beach on San San Bay, Jamaica, West Indies, where they spent some time in February after about 10 days in Haiti. An interesting and stimulating long letter arrived from one of our honorary members, Juan E. Chibás'31, M.I.T. Club of Cuba, containing a declaration of the National Association of University Professionals of Cuba conveying the true situation in our sister republic. Augustus B. Kinzel, Vice-president of Union Carbide Corporation in charge of research, is mentioned in that company's report for his 32 years of service.

Herbert C. DeStaeble, Director of Purchases, Lambert-Hudnut Manufacturing Laboratories, Inc., Lititz, Pa., writes: "I spent a week end in St. Petersburg, Fla., and at a cocktail party had a good chat with Glenn and Helen Fargo, whom I hadn't seen in 15 to 20 years. He is robust and healthy and looks young enough to be my son. He is retired in the usual sense of not having a 9:00 A.M. to 5:00 P.M. responsibility but is adequately occupied with the affairs of the Fargo Company. This includes the supervision of an elaborate motel which he owns;—the Fargo, for the benefit of anyone desiring deluxe accommodations right on the beach in St. Petersburg. His is a happy, relaxed, and enviable life."

Dr. Walter J. Hamburger, Director of Fabric Research Laboratories, Dedham, Mass., is the recipient of the Harold DeWitt Smith Memorial Medal awarded by the American Society for Testing Materials at a meeting in New York City last March. One of the highest honors in textile physics and engineering, it was

awarded in recognition of the close parallel between "... the tenth medalist's contributions to textile research and the ideals of the scientist for whom the medal is named." Walt was previously honored by the A.S.T.M. in 1955, when he was chosen to deliver the Edgar Marburg Lecture, the second of two textile scientists to be so honored in the 32 year history of the lecture.

Commander Robert B. P. Crawford has moved from Washington, D.C., to a new home in Rosemead, Calif. Walter A. McKim has left Anchorage, Ky., and now lives in Florence, Ore. Herbert K. Nock reports changing his home address from Marblehead, Mass., to 1376 Southeast 14th Street, Pompano Beach, Fla. Arnold C. Rood has moved his offices from Boston to 21 Mountford Road, Newton Highlands 61, Mass. Addresses have also been received for Earl H. McBroom, Richard J. Spitz, and W. Hoyt Young and are available from your Secretary. Sumner Hayward, Joe Wenick, and your Secretary attended the March meeting of the M.I.T. Club of Northern New Jersey at which Admiral W. F. Raborn spoke on the Polaris missile. Sumner chairmanned the evening and is also serving on the Club's scholarship committee.

To the family of Orville B. Denison'11 and to the members of the Class of 1911 go our heartfelt sympathy on behalf of the Class of 1921. The outstanding Secretary of an outstanding class, Dennie passed away last February 13. We acknowledge a letter from Sallie Denison which says, in part: "He loved his M.I.T. associations so much, especially his work for 1911. We, his family, have suffered a great loss but we have our memories of a great man, a fine husband and a very loving and understanding father. He passed away very peacefully." Obie had given us timely aid with 1921 news items for many years and we want to add our praise of a thoughtful and kindly friend who will be sorely missed at all Technology gatherings.

It is with heavy heart that we record the deaths of three classmates and extend to their families sincerest expressions of sympathy on behalf of the entire Class of 1921.

Major General James Bryan Newman, Jr., retired Army engineer who helped design and construct the Washington National Airport, died in Orlando, Fla., on February 7, 1959. He had served as military assistant to the district engineer when the airport at Gravelly Point was under construction. He had specialized in work for the Air Force. In 1945, he retired and went to Orlando to live; but he was recalled two years later to help plan the new Air Force Academy. Born in Talladega, Ala., he was graduated from West Point in 1918 and received his bachelor's degree in Course I with us. He served as district engineer for the Army in areas throughout the U.S.A. and in Panama and Hawaii. In World War II, he was commanding general of the Ninth Engineering Command in the United Kingdom and later had charge of all ground construction for the Ninth Air Force in Europe. Hitting the beachhead on D-Day, June 6, 1944, one of his units finished an emergency landing strip by



dusk. Through August of that year, his command built 20 operational airfields in France. He retired for the second time in 1950 and returned to Orlando, where he was a consulting engineer for Aerojet Corporation. He was the holder of the Distinguished Service Medal and the Legion of Merit. He leaves his wife, Frances, of Orlando; and two sons, Robert W. of Los Alamos, N.M., and Colonel James B. Newman, 3d, M.I.T.'53, of Naples, Italy. We are indebted to A. W. Yereance '11 for his aid in preparing these notes.

Colonel Louis George Horowitz, U.S. Army, retired, died at his home in New York City on February 9, 1959. A consulting real estate economist, he had been vice-president of the New York firm of John J. Reynolds and Company. Born in Passaic, N.J., in 1899, he was graduated from the U.S. Military Academy in 1919 and was commissioned in the Corps of Engineers. He received his bachelor's degree in Course I with us. He resigned from the Army in 1924 to enter private business and was recommissioned in 1941, serving with the Services of Supply in this country and in the European Theatre. He was awarded the Legion of Merit before his discharge in 1945. Surviving are his wife, Mrs. Mildred S. Horowitz; and his son, Major James A. Horowitz, U.S. Air Force, retired.

Eugene Stix Weil died last February while on a vacation in Miami Beach, Fla., en route home from Nassau. Born in Chicago, on December 30, 1897, he attended high school in St. Louis and received a bachelor's degree from Washington University, St. Louis, in 1920. He received his master's degree with us in Course X and became associated with the Thompson-Munro-Robins Chemical Company. In 1922, he joined G. S. Robins and Company, St. Louis supplier of chemicals for industrial uses, and was vice-president for many years. He was a former president of the M.I.T. Club of St. Louis and his memberships included the American Chemical Society (and onetime the chairmanship of its St. Louis section); the St. Louis Electroplaters Society; the Associated Drug and Chemical Industries of Missouri; the Westwood Country Club; Missouri Athletic Association; Alpha Chi Sigma; and the St. Louis Family Service Agency, of which he had been president. He is survived by his wife, the former Marion Appel of Cincinnati; two sons, Eugene S. Weil, Jr., University of Pennsylvania '58, and David A. Weil; a daughter, Mrs. Donald Steele, Wellesley '53; two sisters, Mrs. Hannah Wertheimer of St. Louis and Mrs. William Simon of Glencoe, Ill.; a brother, Henry Weil of Dunedin, Fla.; and three grandchildren. We are indebted to Herbert C. DeStaeblor of Lambert-Hudnut Manufacturing Laboratories and to Miss M. Heeter, assistant treasurer of G. S. Robins and Company, for their aid in preparing these notes.

Hope to see you at Alumni Day in Cambridge on June 15. In the meanwhile, keep on sending those welcome newsletters to your Secretaries. — CAROLE A. CLARKE, *Secretary*, Components Division, International Telephone and Telegraph Corporation, 100 Kingsland Road, Clifton, N.J. EDWIN T. STEFFIAN, *Assistant*

*Secretary*, Edwin T. Steffian, Architect, 11 Beacon Street, Boston 8, Mass.

## 1922

The big news in Buffalo is that Colonel Clinton B. F. Brill, Chairman of the New York State Thruway Authority, will arrive on March 23 to review the general progress of his construction work in this end of New York State, and to accompany Mr. Robert Moses of the New York State Power Authority through the Niagara Power Project. Since your Secretary has trucks and equipment scattered over this project, every effort is being made to shine them up properly for the occasion. Colonel Brill will also explain while here what he is doing with all the extra millions from increased tolls. Anyway, he runs a good road. Frank Westcott of North Attleboro has been given credit in the *Boston Herald* for winning the New England Knockout Team-of-Four Contract Bridge Championship at Norwich, Conn. He captained a team which earned 32 red master points for each member. Frank is chairman of the board of directors of the American Contract Bridge League and is past president of the Eastern Massachusetts Bridge Association and the New England Bridge Conference; thanks to Yard Chittick for the news.

C. George Dandrow looks especially well in his picture in the paper advertising his speech at the annual dinner of the Building Trades Employees Association of New York City. His theme, "Salute to the Building Industry," boomed through the grand ballroom of the Waldorf-Astoria Hotel to 1,100 contractors, union leaders, and city, state and federal officials. George is a member of the executive board of the Greater New York Council, and the Boy Scouts of America. He is a trustee of the Engineers Club of New York City, and a member of the advisory committee of Manufacturers Trust Company; to name a few of his activities. Of course, his most prominent job is working constantly for M.I.T. and the Class of 1922. Mr. and Mrs. Frederick Steele Blackall, Jr., of Orchard House, Cumberland Hill, R.I., went to New York and Nassau for their wedding trip the latter part of February. The bride was Mrs. Pauline Goodnow Gardiner of Taunton. Best wishes to them from our entire Class. Figures being compiled in March, indicate our Class as second in the amount of contributions to date. The percentage contributing is lower than it should be. How about trying even harder and digging even deeper next year?

You may be interested in address changes which follow: George A. Watt, 520 Wayfield Street, Orange, California; Alexander D. Ross, 180 Vallee Street, Montreal 18, P.O., Canada; Dr. Charles G. Moore, Glidden Paint Co., Melbourne, Australia; William A. Brown, 9701 East Bexhill Drive, Kensington, Maryland; Brigadier General Wilbur E. Dunkelberg, 422 Northridge Drive, San Antonio 9, Texas; and Colonel Thomas H. Nixon, R.D. #3 Gettysburg, Pa. We extend the sympathy of the Class to the families of Jessie E. Jones, Jr., Southbridge, Mass.; Samuel A. Gayley, Bryn Mawr, Pa.; and Colonel Will I. Levy of N.Y. Colonel

Levy served on General Eisenhower's staff in the Army Air Force in Europe in World War II. He was an executive of Lehman Brothers, the Interstate Department Stores, Schenley Industries, Associated Textile Industries, and R. H. Macy and Company.

A final reminder: Alumni Day, Monday, June 16. We hope to see many of you there and receive much news. — WHITWORTH FERGUSON, *Secretary*, 333 Ellicott Street, Buffalo 3, N.Y. C. GEORGE DANDROW, *Assistant Secretary*, Johns-Manville Corporation, 22 East 40th Street, New York 16, N.Y.

## 1923

Your Secretary was very pleasantly surprised to run into Doc Smith while we both dropped in for breakfast in New York one morning in March. This gave us a good opportunity to talk over some of the old times. It was nice to see Doc, who gets to New York occasionally, as his company maintains an office there as well as their main office in Cleveland.

Your classmate, President Stratton, spoke to about 150 students at the Burton House on Sunday, March 1, at their Egghead Seminar. He spoke on the physical and educational development at M.I.T. and answered questions relative to the operation of Burton House, and some of its problems. Dr. Stratton was also the principal speaker at the Central Massachusetts M.I.T. Club President's night held at the Hotel Bancroft on Wednesday, March 18. This meeting was also attended by many educators from the local Worcester schools.

The Electronic Industries Association imports committee is headed by Robert C. Sprague, Head of the Sprague Electric Company in North Adams, Mass. Currently, the committee is considering the advisability of asking for protection of imports of transistors from Japan.

In the class notes of the March issue, we included an account of Bill Stewart's trip across the Atlantic in his new yacht. Since that time we have been advised that he has been presented the Trans-Oceanic Pennant, by the Cruising Club of America. Nice going, Bill!

News this month is a little on the scarce side and your Secretary would appreciate hearing from any of the class members, giving items of interest relative to themselves or other members of the Class.

We regret to announce the death of Leo S. Hayes on January 31, 1959. Leo took Course III and had been living in Tucson, Ariz.

We wish to advise of the following address changes: Dewitt W. Bennett, 1321 Camp Avenue, Rockford, Ill.; Mortimer C. Blood, 177 East 74th Street, New York 21, N.Y.; Lester B. Bridaham, 718 West Washington Avenue, Elmira, N.Y.; Clyde B. Doolittle, Box 847, Beaten Road, Dennisport, Mass.; Thomas B. Drew, Revolutionary Road, Temple, N.H.; Elmore Holmes, 5605 Tchulahoma Road, Memphis 18, Tenn.; Bertrand A. Landry, Battelle Memorial Institute, 505 King Avenue, Columbus 1, Ohio; Harlow H. Lippincott, 4729 Cumberland Circle, El Paso, Texas; Captain Lisle J. Maxson,

Box 31, 1773 North Roosevelt Avenue, Altadena, Calif.; Thomas F. Richardson, Tung-Acres, R.F.D. #2, Poplarville, Miss. — HERBERT L. HAYDEN, *Secretary*, E. I. du Pont de Nemours and Company, Leominster, Mass. ALBERT S. REDWAY, *Assistant Secretary*, 47 Deepwood Drive, Hamden 17, Conn.

## 1924

Won't be long now before a goodly number of us will be basking in the June sun on Cape Cod. Those who are coming will have received further information by the time these notes appear, so we will not repeat it here. See you then.

The Amezagas will be up from Havana, but not the Rosados. Tony, or at least his telephone company, seems to be under fire by the new Castro regime. A *Herald Tribune* story says "Cuba Taking Over Reins of U.S.-Held Phone Company. The revolutionary government today ordered the American-owned Cuban Telephone Company placed under official Cuban control." It goes on to say that an "intervenor" or commissioner will be appointed to manage and administer. International Telephone and Telegraph says they don't think the company will be nationalized, but it rather looks as though President Rosado will have his hands full for some time to come.

This is probably no record, but the Atherton's of New Hampshire now boast seven grandchildren "and another in production." Blay leads a fairly busy life. In addition to running his insurance business, he holds down another full-time job as a state public utilities commissioner. On the side he is: senior warden of his Episcopal church; commander-in-chief of the N. H. Consistory; vice-president of the N. H. Society of the Sons of the American Revolution; and secretary-treasurer of the M.I.T. Club of New Hampshire. Hardly seems like enough, somehow.

One classmate who will not be with us in June is Dr. Jean Ashton. As Jean MacInnes, she got her doctorate with '24. A note from her son says she "has been in Thailand with her husband, who is doing consulting work with Transportation Consultants, Inc., for the Thai government. They left this past June and will be gone until November. When the Thailand work is finished in March, they will travel to Japan (for the cherry blossoms), then back to India and Pakistan, Bali, and then to Europe." As you can see, Jean will be on the move in June.

Don Moore is now an assistant vice-president of Liberty Mutual in Pittsburgh. He has a daughter who ("can you imagine it!") wants to come to M.I.T. Don, the old artillery colonel of anti-aircraft days, wants to get in on the act today: "We pointed the way to the missilemen." Nick Warren will miss by only a week or so. He'll be in Duxbury later that month, but can't stretch his time to be with us. He claims to be in seventh gear now that he's on the West Coast (Oswego, Ore.), handling pulp and paper machinery for Bird Machine Company. Nick lives by the Lake and Country Club, has his office in Portland, says it's wonderful country and he'll welcome all '24 visitors. Put

Oswego on your West Coast list as a must.

John Carson, a Navy man, got his master's in mechanical engineering with us. He has just been boosted from rear to vice-admiral and returned to the states from Norway. We can't tell you what Elliott Davidson is doing, but you can draw your own conclusions. For some years he has been a mechanical engineer at the Point Mugu (California) Naval Air Missile Test Center. Now comes an address change: Headquarters 5th Air Force, A.P.O. San Francisco. Walt Groce is another who has just added A.P.O. to his address, but in his case it's New York. Of course our perennial traveler, Hank Simonds, will miss reunion as usual. He took off March 10 from Jacksonville for "G.O.K. — God Only Knows." Last time he started out he went one and one-fourth times around the world before he got home again. However, he vows he'll make the 40th — be retired by then.

After 30 plus years with Union Carbide's Linde Company, Ray Hamilton has retired. He's using Union Hall, Va., as a base for doing a bit of traveling. Spent some time in Albuquerque this winter. His youngest daughter, Sarah, graduated from Alabama Polytechnic Institute this spring. Another '59 graduate is Neil Olken's daughter, Nancy Lee, who will wind up her stay at Bryn Mawr in June. His son, Mark, is a doctor and was married a year ago. While we're on the subject of offspring, Russ Ambach's sons couldn't be satisfied with just one college each, but doubled their alumni fund potentialities. Dwight, now a commercial officer in our consulate in Düsseldorf, went to Brown and Tufts; Gordon, a teacher on Long Island, played opposites by getting degrees from both Harvard and Yale. Russ doesn't say that either of his sons followed in his footsteps on the track. They were fast footsteps! But he did start Paul Blampied's son Douglas down the cinder path. Paul says: "At a track meet between M.I.T. and New Hampshire the results were perfect. My son won the dash, but M.I.T. won the meet."

By the way, speaking of alumni funds, we're doing quite all right for M.I.T. this year, as befits a class reaching another major milestone. We're well ahead of anything we've ever done before, both in numbers and amount. Bless you all. Keep it up!

Ex-president Parker is now in the peculiar position of having to ration his time in this country. Listen to this: "Family returned home to Newburyport a year ago. Since then Madeline and I have been commuting. She makes three trips a year of two months each, and I get home for a week each at Christmas and Fourth of July. In order to stay free of U.S. taxes I am only allowed 16 days a year in the U.S. Business goes well and it's a pleasant country — at least the people, if not the weather." You will remember George is a management consultant in London, England.

Just received as we go to press, a letter from your classmates who were in Mexico City at the pre-35th — post Fiesta meeting. "We'll all be up for the 35th," Nish Cornish. "Fiesta is a fine warm-up," Sox Kinsey. "It's been marvellous," Rock

Hereford. "All it's said to be and more," Dave Meeker. Jack Nevin didn't add his bit because he was running a tennis match at the time, and Cy Duevel was at the bullfights; but there's no question they all had fun. A good delegation.

So much for now. When we get a chance to talk with a great many of you personally next month we should be able to dig out enough material to last through another full year — all the little intriguing things that only come out in a convivial session. Jack Hennessy, for example, might report on a questionnaire that he (or Syska and Hennessy) had been retained on the huge Prudential Center in Boston which will go up in the Boston and Albany yards opposite Station 16. Remember Station 16? He probably wouldn't give any details about his prowess on the flashing blades, however, whether he had progressed from Figure 8's to dancing and other involved forms of skating. We don't know those details yet, but we hope to pick them up in June in time to tell whether or not to look for his name on next winter's Squaw Valley Olympic reports. Until next month. — HENRY B. KANE, *Secretary*, Room 1-272, M.I.T., Cambridge 39, Mass.

## 1925

One of three Defense Department employees selected for career service awards this year is James C. Evans, VI, civilian assistant to the Assistant Secretary of Defense (manpower, personnel and reserve.) He is chief advisor on racial and related matters in the office of the Secretary of Defense and is a principal consultant on such matters to other government agencies and organizations. The nomination for the award stated: "Because of Mr. Evans' outstanding ability in this field, the Department of Defense has been consistently in advance of formal direction in assuring equality of opportunity and treatment for all personnel, both civilian and military." In summing up his accomplishments, the Department of Defense said: "Mr. Evans' many contributions to the national security over his more than 15 years of service with the department are deserving of highest recognition and mark him as one of the truly outstanding civilian officials in the department's establishment." I am sure everyone in the Class congratulates him on this well deserved award.

Still dealing with those who have been connected with the Department of Defense, the *Portland (Maine) Sunday Telegram* announced a few weeks ago that Colonel Edgar R. C. Ward, U.S. Army (retired), VIII, is a candidate for town selectman in Falmouth, Maine. He retired in 1957 after more than 30 years of active service as an artillery officer and has been active in town and county affairs as well as in church work in the Falmouth area. He is director and treasurer of the Falmouth Playground Association, and is chairman of the Boy Scout Troop Committee sponsored by the Falmouth Congregational Church. How successful he was in his political campaign has not yet been learned.

An interesting article in the *Newark (N.J.) Sunday News* a few weeks ago was



topped by a picture of Otto R. Richter, XIV, with the notation: "He has traveled from DEW to BMEWS." Otto has a formidable job as assistant project manager at the Defense Projects Division of the Western Electric Company, and is responsible for implementing plans for communications in the vast network of the Ballistic Missile Early Warning System (BMEWS) now under construction. Recently he returned from a 6,000 mile trip to the Arctic after supervising and inspecting the laying of a land and sea cable that will function as a link between missile detection stations in the Arctic and combat control centers of the Canadian and U.S. defense commands.

It is always pleasant to meet members of the Class of 1925 in person; and Harold V. Robichau I, who is with the Stone and Webster Company, called at my office a few days ago while he was helping with his firm's annual ivory hunt at the Institute's placement office. They were of course, looking over the 1959 batch of young engineers.

It is my sad duty to announce the death of Captain Joseph M. Kiernan, USN Retired XIII, who died on February 13, 1959, at his home in Park Ridge, N.J. In 1944, Captain Kiernan received the Legion of Merit award from the Army's Caribbean Defense Command for service as superintendent of the mechanical division of the Panama Canal. Before retiring in 1946, he served at the naval shipyard in Brooklyn. He enlisted in the Navy in 1917. In 1925, while attending M.I.T., he and another officer designed and sailed a rotor boat on the Charles River. The boat, an abandoned Navy cutter, was propelled by a rotor cylinder and believed to be the first of its kind in this country. Captain Kiernan also served in the Navy's old Bureau of Construction and Repair, now known as the Bureau of Ships. He leaves his widow, Mrs. Wilhelmina Mayer Kiernan, and a son, Captain Joseph M. Kiernan, with the U.S. Army. — F. L. FOSTER, Secretary, Room 5-105, M.I.T., Cambridge 39, Mass.

## 1926

We made it to Pigeon Cove this week end even though winter in its dying gasp dropped a foot of snow on the area last Thursday. Chapel Lane leading to our place had not been ploughed, but an oil truck had been down and made ruts for us. When we once get through to the house there is never much snow: we are so exposed that the gales blow it away. A friend, who was here during the storm, clocked gusts up to 60 miles per hour; and it blew steadily at 40. Guess we were fortunate not to be here.

This is the time of year when clippings seem to run out and the inspiration for classmates to write to their secretary seems to be lacking. There's one kind of news that we do not like to receive, but it comes periodically. We have three deaths to report this month. Earl Wheeler died of a heart failure in Hartford, Conn., on February 16. Earl was an active and devoted Alumnus, and we will have more to report in a later issue; but at the moment we can only give you the sad news which came via Bud Wilbur.

We also have a notice from the Alumni Office of the death of Charles E. Tonry on December 21, 1958. He was director of the processing division of the Atomic Energy Commission at Grand Junction, Colo. I got out my '26 Technique to look up his picture because I was unable to place him until looking at the photograph. In doing this I made a very unusual, almost weird discovery. Tonry's photo is in the lower right corner of page 111 of the Technique. The photo in the lower left corner is that of Cecil Thomas. Yesterday, I received the Alumni Office notice of Cecil Thomas' death on January 21, 1959 — note above that Charles Tonry died on December 21, 1958. If one were inclined to be superstitious something surely could be made of this. As a matter of fact, it is sufficiently disturbing for me quickly to close my Technique before I start thinking further about it. A clipping from the *Northampton (Mass.) Gazette* with the date line Haydenville, gives the following write-up about Cecil: "Thomas had resided in this town for the past eight years. He had been employed as a sales engineer at the Gilbert and Barker Company in Springfield for 25 years. He was a graduate of Massachusetts Institute of Technology. He served in World War II as a major in the Ordnance Department, U.S. Army. He attended St. John's Episcopal Church in Northampton. He was a member of the Elm Lodge of Masons and the American Legion, both of West Springfield; the Connecticut Valley M.I.T. Club; and the Hampshire County Garden Club. Besides his wife, Marie Schroeder Thomas, he leaves one son, Cecil A. P. Jr., and one daughter, Sara." From the Class, sincere sympathy is extended to the families of these three classmates.

A post card from that Denver plutocrat, Ben Howe states: "Dear George: Greetings from Mexico. Been here a month, loafing and fishing. It's too cold for swimming. Should have gone further south, but could not get away this winter from business for long. Plan to retire in two years. Leave Monday for Denver. Best personal regards, Ben V. Howe." It's tough, Ben, that you were only able to get away for five or six weeks this winter — we all feel for you. Here's a card from Win Russell, who has been in Formosa for the past several years and now indicates that he is returning: "Now employed by Kennedy Van Saun Manufacturing and Engineering Corporation, Danville, Pa. Have made one three-month trip to Taiwan (Formosa) during 1958 and expect to return to Far East in early 1959."

Barney Gruzen sent the following invitation, which your Secretary regrets he was unable to accept. "Kelly and Gruzen architects/engineers cordially invite you to attend an exhibition of building models, which embody the firm's dynamic philosophy of humanism in architecture, at the dedication of their new offices. The models, selected from many fields, exemplify Kelly and Gruzen's credo that 'man's environment must be centered on distinctively human interests, needs, and ideals.' Date, February 10, 1959; time, 4:00 P.M. to 7:00 P.M.; place, Coliseum Building, 10 Columbus Circle; Cocktails; R.S.V.P."

I now have a little radio job to do that makes it necessary to wind up the class

notes about here. Three months ago I read in *Consumers Digest* that the Radio Shack of Boston was selling for \$27.50 a tweeter equal to anything selling up to \$125. Having always enjoyed a bargain, I ordered one only to find that it was like ordering a Volkswagen: you have to wait. A letter this week indicates that I will receive it in a few days, so I want to take my radio components back to town to have them balanced (after 10 years). This Pigeon Cove hideaway is small, so the radio components are tucked in everywhere: the record player is in one of the kitchen cabinets, the amplifier and timer are behind a concealed door in a little space over the fireplace, and the speaker is up on the balcony. My project is to get these things disassembled and into the trunk of the car. Also, I'm about to run over to town for my morning cup of coffee. I mentioned a couple of months ago that I was going over to a horrible joint for coffee. Now this joint is out of business and our good coffee shop, Oleana's, is open; so I may even go overboard this morning and have a doughnut. See you in June. — GEORGE WARREN SMITH, Secretary, c/o E. I. du Pont de Nemours and Company, 140 Federal Street, Boston, Mass.

## 1927

We regret to advise of the death of Olive B. (Mrs. Raymond) Adkins, who lived with her husband in Dover, Ohio. During World War II, Mrs. Adkins was a chemist with Westinghouse Small Motors Division at Lima, Ohio. She wrote occasionally for the *Cleveland Plain Dealer*.

Otmar Praznik and his son, Anthony '56, both of the Central Technical Department of the Ship Performance Section of Bethlehem Shipbuilding Division at Quincy, attended the recent New York meeting of the Society of Naval Architects and Marine Engineers. Otmar is head of the Ship Performance Section. Anthony is an assistant nuclear engineer. Both are M.I.T. graduates.

George Bergman, 3926 Forest Glen Drive, Knoxville, Tenn., writes in that he is a manufacturer's agent operating in Tennessee, and southwestern Virginia, and is looking for contact with anyone wanting good representation in this area. He correctly reports that Tom Russell is still president of the Highway Equipment Company in Cincinnati, selling tractors and allied equipment.

I don't feel that we did justice to Tom Knowles's Certificate of Achievement award in our last notes. The certificate read: "For performance of outstanding service for the Army Ballistic Missile Agency and the United States Army Ordnance Missile Command, Redstone Arsenal, Alabama. Mr. Knowles has made significant contributions to the Army missile program as a result of his sincere and conscientious efforts in the guided missile field." Goodyear Aircraft Corporation, of which Tom Knowles is president, developed the nose cone on the Jupiter intermediate range ballistic missile.

John Parker's "ghost chaser" lecture (see November notes) is being received with much interest around New England.

The *Milton (Mass.) Transcript* featured Lauritz Rasmussen in a recent article concerning his bridge designing career, culminating in his work on the 1,200-foot Amesbury-Newburyport span. He was in complete charge of its design. The Rasmussens recently celebrated their 25th wedding anniversary. Their son, Albert, a Boston University graduate, is in the Army; and their daughter, Dorothy, works for the Commonwealth.

The Engineering Societies of New England selected Dr. H. E. Edgerton as its "outstanding engineer of 1958."

The Boston section of the Institute of Radio Engineers published a biographical sketch of Frank Massa. Supplementing data previously covered in these notes and in the 25th reunion book, they say the following: "Mr. Massa holds 39 patents on electroacoustical devices and he has published four textbooks and presented 28 papers on the subject, in the course of his career. He has been active in the PG on ultrasonics engineering, is a member of the American Institute of Physics and a Fellow of the Acoustical Society of America. He has served on several scientific committees on undersea warfare and acoustical standards."

The Bomac Laboratories, Inc., of Beverly, Mass., have announced the appointment of Richard Sears Briggs as chief engineer of the Power Tube Division. He was previously with Sylvania Electric Products in Boston.

Before a joint congressional committee on Atomic Energy in February, Samuel S. Auchincloss warned that the reluctance of industry to accept the uses of radioisotopes in industry is costing the United States hundreds of millions of dollars in savings. He told the committee: "The isotope application industry is made up of dozens of firms, most of whom do not have the capability or money properly to promote their applications once they have been developed. Why is it that these scientific principles which permit us to measure and control so swiftly and with such amazing accuracy are not actively adopted by management? Why are these properties, similar to the ones which alchemists strove so hard to discover, not speedily employed by American industry at all levels with great diversification? The answer is simple. American industry is still waiting to be shown, and in our segment of the nuclear industry we don't have the means or the money to show it."

Robert de Luccia recently spoke to the Society of American Military Engineers in Washington on the subject of "The Military Engineer in the Space Age."

Congratulations to Russ Westerhoff who has been elected vice-president and chief engineer of Ford, Bacon, and Davis, Inc. He joined this organization in 1928.

We quote the following up-to-date information on Cyrus A. W. Grierson from the *Bell Laboratories Record*: "In 1954 Mr. Grierson transferred to Military Communication Systems Development, where he was associated with the development of the transatlantic cable terminals. He then worked in Military Communication Systems Engineering Development Department. He is a senior member of the Institute of Radio Engineers. In this issue he is a coauthor of the article 'Carrier

Terminals for the Transatlantic Telephone Cable.'"

Jacob C. Muskin has been named a partner in Singmaster and Breyer, New York City metallurgical and chemical process engineers. Jack Muskin joined the staff of Singmaster and Breyer in 1942 as a designer, and eventually became chief structural engineer. He has also acted as project engineer for the firm on the design of feed materials plants for the Atomic Energy Commission. He is a licensed professional engineer in New York and Texas, and a member of the American Society for Testing Materials and American Concrete Institute. He lives with his wife Fanya and their two children, Ellen and Victor, at 1621 Nelson Court in Hewlett, Long Island.

One of the five new councilors elected to the 17-man council of the American Meteorological Society for a three-year term is Henry G. Houghton, Head, Department of Meteorology, M.I.T. Professor Houghton has served the society over a period of 20 years as president, secretary, councilor, and chairman and member of numerous committees. He is currently chairman of the university committee on atmospheric research. Professor Houghton has received the Society's Award for Outstanding Services to the Society, now known as the Charles Franklin Brooks Award. More next time. — J. S. HARRIS, *Secretary*, Shell Oil Company, 50 West 50th Street, New York 20, N.Y.

## 1928

Recently, while getting fitted to a pair of shoes, your Assistant Secretary was joined by none other than our worthy classmate, Dud Collier. Dud is still with Westinghouse Electric Supply Company in Boston and extremely busy as their field sales supervisor for lighting. With all the current business building activity in the area, Dud finds himself well occupied. Dud's son, Robert, will graduate from high school this year and is planning to enter college in the fall to study engineering.

Late in the past year Jim Donovan received a letter from Max Parshall. 1958 was a very eventful year for the Parshalls. In the spring they visited Max's brother-in-law, Dr. Carl T. Chase, at Franklin Institute; then wife Mary's family at Kennebunkport in Maine; thence on to the reunion at York Harbor. They were at the Institute for Alumni Day, and visited with Cole Armstrong and his wife in New York (the girls were roommates at Radcliffe). November 9 was daughter Marie's 21st birthday and also her wedding day. She was married to Rodney R. Erickson, a mechanical engineer (Colorado State University graduate) now with the Caterpillar Tractor Company, Joliet, Ill.

Max is still with Colorado Agricultural and Mechanical College, where he teaches engineering subjects, including advanced surveying, and engages in laboratory studies besides. Mary is busy teaching piano: she has 35 or 40 pupils. — GEORGE I. CHATFIELD, *Secretary*, 111 Winfield Avenue, Harrison, N.Y. WALTER J. SMITH, *Assistant Secretary*, 15 Acorn Park, Cambridge, Mass.

## 1929

Even though this is the last issue of *The Review* before the 30th reunion at Bald Peak, there is little that we can say as these notes are written which we have not already said in the letters which you have received and in the previous Review notes. However, a few items which may bear repeating did come to light last night at a meeting of the committee. If you will require transportation from and to Boston for the reunion, you should either specify this on the questionnaire which you return to Gordon Williams or write to me sometime a couple of weeks before the reunion, after your plans are finalized. The committee will endeavor to provide transportation from and to Boston for anyone arriving on Friday. If you plan to arrive later than Friday, the practical way of getting to Bald Peak is by rental car.

Marie Fahey is arranging for bridge and bridge tournaments in case we have inclement weather, and we are sure that a few poker tables will be set up in case outdoor activities are not possible. Paul Donahue asked if anyone knows of the location of the '29 banner which was borrowed from the 25th reunion. He would appreciate having it brought to the 30th.

It is too early as these notes go to press to predict how many we can expect to attend the 30th, but the returns are coming in well at this point. Several of the "hopefuls" have firmed up their reservations and sent in their registration fee.

A few personal notes picked up last night: John and D. A. Wilson are currently in Acapulco, Mexico, for an M.I.T. get-together there. Wally and Joan Gale are leaving almost immediately for a two-month trip to England, Scotland, and Ireland, returning only a few days before the reunion at Bald Peak. Gordon Williams is currently writing a textbook on hydraulic engineering, and he and Olive report that they have their last son in college. Paul Donahue reports that he and Fran attended the Association of General Contractors convention in Miami recently and spent some time with Mary Lou and Dave Peene at Coral Gables. They are both full of praise for the house which Dave designed and built in Coral Gables on the edge of the waterway and around a swimming pool. It sounds fabulous. Clara and Ed Farmer report the birth of a grandson, their first grandchild. Ellie and Sol Horwitz are off to Israel and Italy next month. They will be back in time for the reunion. Carl Peterson says that he plans to open every fishing season in the New England states and has in mind a week on the Miramichi as soon as the season opens. Eric Bianchi is reported to have graduated from the American Management Association school in Saranac Lake. I did not take time to find out just what that makes him; congratulations anyhow.

I talked with Elmer Skonberg in Louisville a couple of weeks ago. Elmer is thinking seriously of attending the reunion, and we are looking forward to seeing him.

We had a note from Arthur Robinson advising of the death in May last year of Willard Robinson in East Orange, N.J.



Those of you in chemical engineering will remember Willard. Another sad note is the death of Manuel Patino. Gordon Williams, who knew him well, has given me the following: "His classmates will remember him as a gracious and kindly person, even as a student. Many will also remember the amazing neatness and artistry that characterized all his design work and problems. Manuel, or Pat as he was called, was a member of a leading family in Panama; and after receiving his master's degree in 1930, he returned to serve his country in various capacities until 1954. Among the important positions he held were chief engineer of railways, minister of public works, manager of a government bank, and delegate from Panama to several international meetings and congresses. He passed up the opportunity of being elected president of Panama, recognizing that officials in Latin America are apt to be short lived; and he preferred life to further glory. Pat had lived in the U.S. since 1954 and was in Florida at the time he died."

Dexter Osgood coauthored an article entitled "New Uses for Short-Haul Carrier," which appeared in the *Bell Laboratories Record* in February. Dexter joined the American Telephone and Telegraph Company in 1930 and worked on inductive co-ordination studies, transferring to the Laboratories in 1934. From 1942 to 1946 he served in the Signal Corps in the European theater and was awarded the Bronze Star for meritorious service. At present he supervises a group concerned with studies of transmission maintenance and objectives. Dexter is a professional engineer in the state of New York, an associate member of the American Institute of Electrical Engineers, and presently is chairman of the wire communication systems committee of the A.I.E.E.

Norm Wickstrand was the author of an article in *Design Engineering* in February, concerned with the effect of thrust loads for axial piston pumps. Norm is a mathematician in the Bearing Engineering Department of Torrington Company and resides in Harwinton, Conn. He has served on the faculty of the Torrington branch of the University of Connecticut as a mathematics instructor for the past two years. He is a member of the Litchfield County Engineers Club.

We are all looking forward to seeing you in June. — FISHER HILLS, *Assistant Secretary*, 62 Whittemore Avenue, Cambridge 40, Mass.

## 1930

There'll be two graduations celebrated at Ralph Appleton's home in Columbus, Ohio, this year: his son, Fred, graduates from Kenyon College in Ohio, and his daughter, Dorothy, graduates from Columbus School for Girls. Dorothy hopes to do her undergraduate work at Wellesley College. The Appleton family went abroad last year for their first look at Italy and Greece, the latter being highly recommended.

We received word from Josiah Barrett of Nantucket, Mass., that he is planning to attend our 30th reunion next year at Oyster Harbors. Good news! (Hope all of our classmates are thinking along these

lines.) In 1958 Josiah was re-elected register of deeds for Nantucket County. He asked if we had any information on Joe Becher, Course VI. As a matter of fact, just before we started to compile these notes, we received a post card from Joe. Joe Becher is assistant chief electrical engineer at Burns and Roe, Inc., 160 West Broadway, New York 13, N.Y. He has a 12-year-old boy who is looking forward to coming to Tech.

Palmer Boggs is still serving as chairman of the School of Architecture, University of Oklahoma, where he believes some important and progressive work in architectural education is being done, and where he still is enjoying life and the fruits of his work at M.I.T. Since 1935 Bill Lindbeck has been in the retail lumber and architectural millwork business with his family. He has charge of manufacturing custom and architectural woodwork. Bill is married (since 1945) and has no children. He sends his best regards.

In a news release from the Austin Company of Cleveland, Ohio, we read that our classmate, Al Waidelich, was named one of three new directors of the company. His position is vice-president and director of engineering and research. Al joined the organization as a structural designer in its New York office in 1936, following several years on the structural engineering faculty at M.I.T. and two years as assistant professor of civil engineering at Robert College in Istanbul, Turkey.

Here are some changes in address: Wilbur F. Eldridge, 3 Beach Street, Marblehead, Mass.; Major General Charles K. Gailey, Jr., The Pentagon, Room 1E-440, Washington 25, D.C.; William F. R. Griffith, Jr., P.O. Box 4367, Tucson, Ariz.; Joseph W. Landry, P.O. Box 1423, Teheran, Iran; Narino C. Rivera, Box 866, Panama, Republic of Panama; Harry A. Shaw, White Pine Copper Company, White Pines, Mich. — GEORGE P. WADSWORTH, *Secretary*, Room 2-285, Department of Mathematics, M.I.T., Cambridge 39, Mass. RALPH W. PETERS, *Assistant Secretary*, 249 Hollywood Avenue, Rochester 18, N.Y.

## 1931

An interesting article, entitled "A.E.C. Hires Boston Firm to Light H-Bomb Fuse," appeared in the February 15, 1959, *Boston Globe*. The article tells of the work of Edgerton, Germeshausen, and Grier, Inc., of which Ken Germeshausen is a member. The article goes on to tell how the Atomic Energy Commission calls on E. G. and G. to light the fuse when they want to run an H-bomb test, to disarm H-bombs that don't go off, to make the equipment which sets off the bomb, and so forth. As if that wasn't enough, the article states they are also designing the control system for the first nuclear rocket for interplanetary travel, and have been asked to put a flashing light in one of the future satellites in order to facilitate making accurate measurements of the earth. Speaking of Ken Germeshausen, it says that he was with the Radiation Laboratory at M.I.T. and leader of the modulator switch development group during the war. "Germeshausen holds some 30 patents covering electronic circuits and elec-

tron tubes," the article continues; and then it tells of his high power thyatron switching tube, which boosts radar ranges.

Doyle Langdon Northrup has been awarded the President's Award for Distinguished Federal Civilian Service. An article in the January 20, 1959, *New York Times*, entitled "Lost: Cloak and Dagger," gives the following information on Doyle Northrup: "Doyle Northrup lost his cloak-and-dagger anonymity today as one of the nation's leading scientific spies."

"For the last 10 years, Mr. Northrup has been technical director of a super-secret Air Force project responsible for detecting atomic tests within the Soviet Union. His clandestine role came to an end today when President Eisenhower conferred on him the President's Award for Distinguished Federal Civilian Service. The award was for his 'immense contribution to the security of the United States.' Spelled out in black and white in the citation — in a manner which caused shudders among security-conscious Air Force officials — was a notation of the secret work performed by Mr. Northrup in developing 'our system of nuclear detection and surveillance.'"

"Mr. Northrup was not present at the White House to receive the award, the highest given civilian employees of the government. He was in Geneva as a member of the United States delegation seeking to negotiate with the Soviet Union for an end to atomic tests. The disclosure of Mr. Northrup's hitherto hush-hush activities probably came as no surprise to the Russians. Since last summer he has sat across the bargaining table from them at Geneva discussing ways of detecting atomic tests. His obvious knowledge of test detection occasionally prompted jesting comments from the Russians over exactly what he did back home."

"It was just a little over 10 years ago that the Truman administration decided to establish a detection system to pick up any atomic test in the Soviet Union. Mr. Northrup, then a civilian scientist with the Navy, was chosen to be technical director of AFOAT-1, a secret project in the Air Force Office of Atomic Energy whose existence the Air Force still will not officially acknowledge. AFOAT-1, along with other agencies, built up the global detection system that spotted the first Soviet atomic explosion in September, 1949. This was a warning to the United States that its atomic monopoly had been ended several years ahead of official expectations. Mr. Northrup was born in 1906, the son of a bank examiner for the state of Washington. He spent his early life in Washington and attended Whitman College in Walla Walla."

"He got his master's degree in physics from the Massachusetts Institute of Technology and then became a member of the physics research staff there."

"In 1940 Mr. Northrup became a civilian scientist with the Navy and was at Pearl Harbor installing degassing equipment to protect ships from magnetic mines at the time of the Japanese attack. During the war he played a key role in discovering and correcting defects in United States torpedoes that prevented them from exploding when

they hit enemy ships. For this he received the Meritorious Civilian Award from the Navy in 1945.

"For relaxation, Mr. Northrup used to have a country home in Maryland and a motor boat in which he cruised on the Potomac River. These, however, were forgotten in recent years as he became more and more wrapped up in his work. Mr. Northrup was married in 1934 to the former Sybil Louise Crosby of New Bedford, Mass. They live in an apartment in nearby Alexandria, Va., overlooking the Potomac."

Another clipping forwarded by The Technology Review (to whom I am deeply grateful for so much of the material in these columns) tells that Joseph P. McBrien has undertaken his new duties as county administrator in Contra Costa County, California. He has been a public administrator consultant for the county since February 1957. The article goes on to say: "McBrien married the former Edna Morrow of Fresno in 1949, and with their two daughters they make their home in Martinez, Calif."

"He is a graduate of Attleboro High School and of Massachusetts Institute of Technology with an S.B. in civil engineering and an S.M. in railroad operation. Before entering military service in 1942, McBrien held a number of federal and state positions. These include the post of chief office engineer for the Work Projects Administration, special engineer agent for public works in New York City, and research engineer for a special Massachusetts Legislative Commission on Taxation and Public Administration. He was employed for a short time in the city engineer office here and served as a member of the recreation commission. While with the Public Administration in Chicago, McBrien made detailed operational studies in public works, flood control, social welfare, probation, and juvenile hall and county executive offices. Most controversial of the problems which he now faces is the recommendation for consolidation of the county's public works and flood control functions. McBrien said he believed consolidation would be advantageous only if it brought a physical combination of the offices now in Martinez and southwest of Concord. He is also in favor of modernizing a 1951 ordinance bringing about rules governing his office rather than expansion of duties."

We have only just learned and are sorry to report the death of Charles H. Kaiser in August, 1955. No details have been received.

The following address changes have been received: Edward F. Coy<sup>23</sup>, Laredo Way, St. Petersburg 4, Fla.; Commander Frederick A. L. Dartsch, 3950 Lake Shore Drive, Apartment 1406, Chicago 13, Ill.; Lester W. Gallup, 2555 Marathon Lane, Fort Lauderdale, Fla.; George S. Gladden, The Barn Shop, Kent, Conn.; Captain James H. Rodgers, 1234 31st Avenue, San Mateo, Calif.; William H. Williams, 1248 Cordova Avenue, Glendale, Calif. — EDWIN S. WORDEN, *Secretary*, 9 Murvon Court, Westport, Conn. GORDON A. SPEEDIE, *Assistant Secretary*, 90 Falmouth Road, Arlington 74, Mass.

## 1932

The big news is the cover man of the year for the chemical industry. Our Class President appeared on the cover of *Chemical and Engineering News* in the issue of February 16, 1959. The occasion was the award to Bob Semple of the 1959 prize of the Commercial Chemical Development Association. I wish I had space to quote the whole article, which describes his career at M.I.T.; his agility on the clarinet and saxophone as leader of the Tectonians dance band when we were all students here; his following progressive advancements at Monsanto; and then his appointment as president of the Wyandotte Chemical Company in 1949. Specifically, the award went to Bob for being the prime accelerator of Wyandotte's growth during the past nine years, from net sales of 45 million to 80 million dollars per year and for expansion in the organic chemical industry with the construction of a new 37 million dollar plant at Geismar, La. Quite a few of our classmates have written in to me about this award, and I am sure that all of us join in congratulating Bob on his outstanding achievements in the chemical industry.

Carroll L. Wilson, XV, has resigned his position as chairman of the executive committee of Metals and Controls Corporation of North Attleboro, Mass. Carroll was instrumental in bringing about the merger of his company with Texas Instruments and will continue as an advisor to the latter firm. Metals and Controls experienced a tremendous growth, particularly in the nuclear fuels business, during Carroll's administration. He is to be congratulated for having brought about the merger, in which Texas Instruments will be the surviving corporation.

Colonel Arthur L. MacKusick, II, has taken command of the missile ranges at the White Sands missile range in New Mexico. Previously he had been deputy ordnance officer of the Eighth Army, with three and a half years' service in Korea.

Our former Class President, Thomas E. Sears, Jr., XV, has been named president of the firm of Thomas E. Sears, Inc., a very prominent Boston insurance agency and reinsurance brokerage firm. Tom succeeds his father, who died last year. Richard M. Stewart, XVII, who succeeded to the presidency of the American Brass Company in Waterbury, Conn., last year, has recently been elected a director of the Bullard Company, a prominent manufacturer of machine tools. Another appointment of note is that of Dr. Manson Benedict, V-G, to the general advisory committee of the U.S. Atomic Energy Commission for a six-year term. This is certainly recognition of the tremendous advancement which M.I.T. has made in the field of nuclear engineering and the growth of a course into a large department, which is headed by Manson. Selden B. Spangler, XVI, has retired from the Navy as a vice-admiral and was awarded the Legion of Merit for his services. He has been appointed director of research for the Garrett Corpora-

tion and lives in Scottsdale, Ariz. I hope that he has had time to watch the Boston Red Sox go through a virtually undefeated season in their training camp in his home town. Maybe he should move along with them to continue giving them the good luck they need for the regular season. Another military officer in our Class is Major General John H. Hinrichs, II. He has recently been appointed to the high post of chief of Army Ordnance.

Sidney M. Edelstein, V, President of the Dexter Chemical Corporation of New York, has hit the headlines of the Boston papers for the presentation of a manuscript of Sir Isaac Newton to the library of M.I.T. The 61 pages of the manuscript tell how to change base metals into gold. The work is Newton's translation, with commentary, of a book on alchemy by Nicholas Flamel, a Fourteenth Century Frenchman who claimed to have succeeded in doing what ancient alchemists tried for centuries — change a cheap metal into gold. This is a rare manuscript and represents the first original Newton work to be given to the Institute. M.I.T. is very grateful to our classmate for this contribution. — ROLF ELIASSEN, *Secretary*, Room 1-138, M.I.T., Cambridge 39, Mass.

## 1933

With spring only a whisper away and with the results of the blizzard of last week slowly disappearing, we turn hopefully to thoughts of summer. This means Alumni Day; and a very special one, too, since Jay Stratton will be inaugurated on that day. We had a grand turnout for our 25th; let's all get back to take a reading this June on relative gain in weight, loss of hair, and so forth. Speaking of reunions, we are prompted to steal *Newsweek's* query, "Where are they now?" And we refer to the fellers who turned the crank to make our 25th a success: Ed Goodridge (and his most able assistant, Blanche Reeves); Clare Farr; Fred Murphy (we've had nothing but praise for your bracelets and pen sets, Fred); Westy Westaway; Lou Flanders; and, of course, genial Charlie Bell. We know what you were doing with all your spare time a year ago; what nefarious after-hour pursuits keep you occupied these days?

Our man of the month is Charlie Fulkerson, II, who is now a director of the Citizens and Manufacturers National Bank in Waterbury, Conn. Charlie is president and treasurer of the Waterbury Pressed Metal Company and has a distinguished record of public service, ranging from trustee of the library, the hospital, and Visiting Nurses Association to former alderman and president of the Smaller Manufacturers Association. Congratulations, too, to Jim Potter, VIII, who received the distinguished service citation from the American Association of Physics Teachers in January; Jim heads the Physics Department at Texas Agricultural and Mechanical College, College Station, Texas.

We share with interest one characterization of Athel Spilhaus, XVI, in a



lengthy article on his comic strip "Our New Age." Athel is described as "a big, husky man, an extrovert, with an extraordinary gift for making friends with all kinds of people in all kinds of places and under almost all circumstances." This is Athel to a "T"!

We record with regret the death, following a heart attack, of Albert M. Chambers, Jr., XVI, on January 28, at his home in Palmyra, N.Y. Al was with the Garlock Packing Co. in Palmyra.

Dick Zimpel, VI-A, whose change of address we reported last month, dropped in to say he's a research associate in food technology here at M.I.T. Small world — or big institution. Dick looks hale and hearty; his daughter is a sophomore at Vassar and his son is at Kimball-Union in New Hampshire.

Had a note from Bill Baur, II, who has just moved to the Philadelphia area from Lynchburg, Va. Bill continues as a specialist in advanced manufacturing engineering for General Electric. Bill's daughter, Linda, is a student at Lesley College here in Cambridge and plans to be married this June. (Don't let that check book leave your desk, Bill!)

Here are several other address changes — and we would welcome the stories behind the moves: Werner Bachli, XIV, from Sao Paulo, Brazil, to New York City (Werner is still with International General Electric); Cortlandt Campbell, II, from Grosse Point, Mich., to Winchester, Mass.; Samuel Cauman, IV, from Cambridge to New York City; Rafael Valdez, X, from Glen Ridge, N.J., to Guayaquil, Ecuador, South America; and David L. Van Syckle, II, from Washington, D.C., to Los Angeles.

Yours for a most pleasant summer. — R. M. KIMBALL, *Secretary*, Room 3-234, M.I.T., Cambridge 39, Mass.

## 1934

It's not yet too late to plan to come to our 25th reunion if you're not already on the list. If you've lost the registration information write to Professor Joe Bicknell, Building 17 at M.I.T., and he will see that you get same by return mail.

A check with 25th reunion headquarters gives good cause for anticipation of this event. As of mid-March, 116 classmates indicated that they plan to attend, 91 of these with wives. Also a total of 100 children were then expected to accompany their parents for part or all of the events. As for the commemorative book, 327 personal histories had been received.

The reunion committee has arranged for looking after children during the week end so that parents and children both can enjoy separate programs. To relieve parents of responsibility for their children's doings, professional counselors will be engaged to lead the children's activities.

Hoyt Steele was a panelist at a management seminar which was held late in January at Amherst under the auspices of the Associated Industries of Massachusetts. Hoyt has been head of General Electric's Government Relations Service since 1957, when he left the presidency of Benjamin Electric Company.

Mario Vangeli retired from the Navy with the rank of captain in 1957 and is

now supervisor of Raytheon's European interests, with headquarters in Rome. His Navy service had been with Bureau of Ships, posted at Fore River, Hingham, Florida, and Washington. Having lived his first six years in Italy, his present job takes him back to the country of his birthplace.

Paul Cushman addressed the Portland chapter of the American Society of Tool Engineers on the subject "Plant Safety." Paul has been with S. D. Warren Company in Westbrook, Maine, since 1947.

Edward Comings, who received his Sc.D. in chemical engineering with us, has been appointed dean of the Engineering School at the University of Delaware as of this June. He comes to this post by way of the headship of Purdue's School of Chemical and Metallurgical Engineering.

Art Conn spoke in February to a chemical engineering group at Columbia on design, construction, and operation of the first plant for large-scale separation of the isotopes of boron, a wartime project of Standard Oil of Indiana. Art is superintendent of technical services for Standard at their Whiting, Ind., refinery. — WALTER MCKAY, *Secretaries*: WALTER MCKAY, Room 33-217, M.I.T.; MALCOLM S. STEVENS, Room 1-139, M.I.T., Cambridge 39, Mass.; JOHN A. HRONES, Vice-president for Academic Affairs, Case Institute of Technology, University Circle, Cleveland 6, Ohio.

## 1935

As many of you have noticed in the March issue of *The Technology Review*, our Bev Dudley has resigned as editor to accept a position as assistant to the director of Lincoln Laboratory. He has been a great help to me with the class notes — many thanks, Bev, and I hope you will still be able to send me some notes. Dr. Frederick F. O'Brien was recently appointed medical examiner for the Fifth Plymouth district. Fred was graduated from Tufts Medical School in 1939. After serving his internship, he entered the Army Medical Corps, where he served until 1946, attaining the rank of lieutenant colonel. He then served a residency in ophthalmology at the University of Iowa, returning to practice in Cohasset, Mass. Robert F. Flood, who became associated with Union Carbide Corporation in 1935, was recently made vice-president of one of its divisions, Linde Company.

The December issue of *Industry* carried a long article on Market Forge Company, whose president is Leo Beckwith. Leo, through planned research and development and his excellent leadership, guided his company from a job shop to a plant manufacturing its own products — products so well designed and constructed that they are leading their fields. Donald Fenton, equipment engineer in the spring division of American Steel and Wire, perfected a machine tool that made his company competitive in the production of brake assemblies. Now with the aid of Don's creation, American Steel and Wire is the major producer of hand brake assemblies for Chevrolet. — FRANCIS W. MULDOWNY, JR., *Secretary*, 1109 Boylston Street, Chestnut Hill 67, Massachusetts.

## 1936

Classmates are still pretty much on the move. Charlie Saffer is now with National Fireworks Ordnance Corporation, West Hanover, Mass. Bob Lutz has moved to P.O. Box 1173 Rancho Santa Fe, Calif. Bill Hope is at 29 Bagdad Road, Durham, N.H. Joe Gratz has moved to 2235 St. Marys Avenue, Omaha, Neb. Charlie Holman has joined Pittsburgh Plate Glass Company, 1 Gateway Center, Pittsburgh 22, Pa. Clarence Horton can be contacted at 519 Chestnut Street, Sewickley, Pa. Bob VanPatten-Steiger is now at 7 Audubon Road, Wellesley 81, Mass. Jim Seth's new address is 1574 Sheridan, Glendale, Calif. Sherman Shull has moved to 41 Brookside Terrace, North Caldwell, N.J. Al Musschoot is now in Anchorage, Ky., Route #1, Box 1023. Stan Freeman's new address is 709 North Beverly Drive, Beverly Hills, Calif. Another Californian, Charlie Crede, just moved from Pasadena to Altadena — 2068 Midlothian Drive. Torgils Wold is now at 5155 37th Road North, Arlington, Va.

Bill Creasy, who was written up in the February notes when he retired from the Army, has joined the Lummus Company. This is an engineering and construction concern, and Bill has been appointed a vice-president. He will also serve as director of the Lummus Engineering Development Center at Newark, N.J.; this center experiments in production processes. Bill had been chief chemical officer of the Army since 1954.

Cesar Calderon has once again come through with some interesting news. Cesar is one of the few old reliables who can always be counted on to keep the notes alive. He enclosed a write-up that appeared in the *Architectural Record* on the Calderons' new home at 1370 Luchetti Street, San Juan, Puerto Rico. He also sent 14 color photographs of the house and grounds. We surely wish they could be reproduced here. Cesar writes that the final blueprints were the result of a year and a half of planning, and the actual construction took an additional year and a half. In way of summary, the bedroom wing is a complete house in itself. The house is centrally air conditioned, and contains all sorts of conveniences and gadgets like automatic sliding garage doors; complete intercommunication system; light dimmers; and two separate music circuits with built-in speakers throughout, one for the children and the other for the grownups. The place is just out of this world! I had always planned on getting down to Puerto Rico and having an ice cream cone with Cesar (among many other things, he is the ice cream king); but after seeing the kitchen and bar equipment, I believe I will push the date up a couple of years.

Cesar says that he is devoting more and more time to government and community work. Of course he still is on the board of directors of the Puerto Rico Government Development Bank, P.R. Industrial Investment Company, the P.R. Business Council, the Chamber of Commerce of Puerto Rico, and *Compañía Financiera de Puerto Rico*. That represents a lot of cigar smoking in any man's country.

Cesar also sent along a condensed edition of *Town and Country*. In Cesar's words: "This will give you an idea of the many changes and improvements that are taking place on this island. In addition to what is shown and said there, during the last eight or ten years 600 new industries have opened their doors; 580 are in active operation. If you stop and think that we do not have any natural resources outside of climate, scenery, and manual labor, and that 10 years ago this was one of the poorest places in the world, you will realize that in order to have achieved the highest per capita income of any of the Spanish speaking countries in the world and in order to purchase annually from the States over one billion dollars worth (which makes us about the fourth or fifth most important customer of the States)—you will realize that this has required a lot of imagination and hard work."

Cesar continues: "I sincerely feel that every thinking American who is worried and concerned about the future of mankind in its struggle with the forces of Communism should visit Puerto Rico in order to renew his faith in the ability of hard-working people to improve their lot without enslaving the mind or body of any single human being. Another most refreshing and inspiring experience is to find a government which is run by absolutely honest and dedicated people, one which I can assure you is completely free of graft and corruption of any kind or size, and a community where racketeers or even cheap politicians do not exist simply because they are not tolerated. . . . By and large, sooner or later, everyone will come to visit us because new hotels are constantly being opened and many new ones are right now either in the construction or planning stage. Needless to say, if any fellows from the Class or their friends come down, nothing will give me greater pleasure than a chance to entertain them and show them around."

Thank you very much, Cesar; you are a terrific guy. I think it might be a good idea to have an off-year reunion in Puerto Rico, possibly this summer. It would make a great place for the 25th, but traditionally that is held at school. How about some comments from you stay at homes as well as you world travelers?

Walter Bain is now with Radio Corporation of America, Front and Cooper Streets, Buildings 2-5, Camden 2, N.J. Dick Morton's new address is Apartment 9, 1547 28th Street, Arlington 6, Va. Brockway McMillan is now at 2227 49th Street Northwest, Washington 7, D.C. Nilakanta Sastry is in India; write c/o N. Sri Ram, T. S. Adyar, Madras, India. Leo McKenney is at R.F.D. #2, Box 235, Allendale, N.J. Lieutenant Colonel Roman Ulans can be reached through GENMISH, A.P.O. #205, New York, N.Y. Arthur Boyan moved from Dayton to Waynesville, Ohio—Route #1. Tom Waram's new location is north of the border—176 Hillcrest Avenue, Hamilton, Ontario, Canada. Our last change is a double-header: Charlie Rife has added "Dr." and has relocated at 716 North Lime Street, Lancaster, Pa.

Received a very nice note from Gerald McMahon. Words of encouragement do

help the scribe's morale, particularly when accompanied by news. Gerry is now at 1820 Sixth Street, Lake Charles, La. He writes:

"I'm still with the Cit-Con Oil Corporation in Lake Charles. This company is a lubricating oil and wax refining division for our two parent companies, Cities Service Oil Company and Continental Oil Company. I went with Continental after graduation and was transferred to Cit-Con when it was organized in 1947. I was an area superintendent in the Operating Department until February, 1957, when I took over my present job of manager of technical services.

"Catherine and I have six children, whose ages range from 16 to 2. Three are boys and three are girls. Last February we took the two youngest children on a flying visit to Boston and New York. We ran into a lot of snow and cold weather. This summer we left the two youngest with their grandparents in Oklahoma, and the rest of us piled into our station wagon for a four weeks' vacation in the East. We took in as many historical points as possible, including Williamsburg, Washington, Philadelphia, New York, Boston, Niagara Falls, and Chicago. We went all over the M.I.T. campus to give the children a good idea of what the Institute is like. We all enjoyed the trip very much, and we believe it will be of considerable help to the children in their school work. I plan to go to New York again next month to take in the Technical Association of the Pulp and Paper Industry meeting at the Commodore Hotel.

"I haven't seen any classmates in many years. Vernon Osgood has been living about 40 miles from me, but I haven't seen him lately. I had an invitation to Harry Donaldson's wedding in North Carolina about a year ago but wasn't able to attend.

"It's a little too early to do too much planning, but we are hoping to be able to go to Boston in 1961 for our 25th reunion. Time is passing so rapidly lately that 1961 will be on us before we know it."

Gerry's last paragraph is so true. From what we hear, our 25th is going to be something none of us should miss. I can't think of a happier note on which to close this installment than the thought of another reunion.—JIM LEARY, *Secretary*, One Putnam Park, Greenwich, Conn.

## 1937

W. Gardner Barker has been elected president and chief executive officer of Thomas J. Lipton, Inc. He was formerly executive vice-president of the firm. Dr. Adolph L. Antonio has been named vice-president of Aerojet General's Chemical Division. For the past four years he has been general manager of the Chemical Division of the General Tire and Rubber Company. In his new position, Dr. Antonio will provide management direction of the chemical activities of the company.

George Ewald has been named manager of the Synthetic Industrial Fabric Department of J. P. Stevens and Company, Inc. Ernie Ferris is with the Spring Division of Borg-Warner Corporation, working on the engineering of clutch de-

sign, manufacturing, and application. Ernie writes that they had a recent visit with Bobo and Rita Brauer and their five children.

Windy Johnson, Chairman of our 25th reunion, writes his company, Johns Manufacturing Company, is expanding with some new products in a different field. They are building up a technical background that is quite impressive on electrolytic wear and oxidation—polymerization inhibition. Windy continues: "I see George Rundlet (65 Sycamore, Berkeley Heights, N.J.) in my dealings with the California Texas Oil Company. He heads up the corrosion work and some of the other phases of their operations. All of the fellows I have talked with have expressed a great deal of interest in the reunion in '62. We have the place and the time is blocked off, so let's go. We should keep an open mind on any changes of plans; some very interesting reports have been coming from those who have attended the on-campus reunions, and possibly by the time two more years roll by, the picture will change. I would appreciate hearing from any of the fellows on the subject." Both Ernie Ferris and George Ewald have joined the growing list of those who are planning on attending our 25th reunion in June, 1962. Let your Secretary know of your plans. The reunion will be a family affair and present plans call for holding it at the famous Oyster Harbors Club on Cape Cod. A wonderful chance to combine a vacation with the family with a renewal of your college friendships. But right this year, we are planning for Alumni Day, 1959. Last Alumni Day was an outstanding affair with a good attendance from our Class. Plan to attend with your wife so that we can live up to the following toast that our President Phil Peters made at the last Alumni Day. "Here's to next year—we should have the biggest turn out yet."—ROBERT H. THORSON, *Secretary*, 506 Riverside Avenue, Medford 55, Mass. S. CURTISS POWELL, *Assistant Secretary*, Room 5-323, M.I.T., Cambridge 39, Mass. JEROME E. SALNY, *Assistant Secretary*, Egbert Hill, Morristown, N.J.

## 1939

George Cremer has written from San Diego, land of sunshine, lemon trees, and avocados, that he left this southwestern paradise to make some more speeches on honeycomb-structured, laminated stainless steel and aluminum, which are becoming increasingly popular in the fabrication of aircraft and missiles. One of his talks was before a technical group in New York City, and the reception inside was warm even though the temperature outside was low enough to make George wish he had brought along his "longies."

Fred Cooke, his ever-livin' wife, and four Cookies are stationed now at Mugu (about 100 miles north of Los Angeles), and I had a chance to see Fred for a few minutes there one day between conferences. Fred is very active on the staff of the Commander (Navy) for Pacific Missiles Projects. Naturally he couldn't talk much about the work, but I gathered he is very stimulated, travels a lot, is probably on Cloud Nine, and may soon be in



orbit. We both discussed ways and means of getting to reunion in June but weren't able to promote any practical means for having someone subsidize our junkets. So we both report from our departments that "hope springs eternal."

Dave and Ellen Lindberg are still with Pacific Telephone and Telegraph, headquartering at Lodi, Calif. I phoned Dave on my way through but he was off on some junket; and I am sorry to report that I had neither the chance to get more news for you nor the chance to eat some of the world's finest cheesecake, which is a dessert specialty of the Lindberg household.

Dr. Kenneth L. Cook, formerly of Portsmouth and now head of the geophysics department of the University of Utah, has been selected to give lectures and consultations this spring under a grant from the National Science Foundation. Ken, Lois, son Wayne, and daughters Carla and Shauna are now living in the West; but news of this adventure-to-be was reported in the newspaper published at Portsmouth, N.H. It's a small world.

Another news item reports Francis Sargent has resigned his position with the Commonwealth of Massachusetts to accept a position as executive director of the Outdoor Recreation Resources Review Commission in Washington, D.C. From Fall River, Mass., comes another report that Harry Wexler, Director of Meteorological Research for the U.S. Weather Bureau, is traveling again (from his home at Falls Church, Md.) to make speeches across the country.

From Portland, Ore., comes another announcement that Albert O. Jarvi has been appointed head of the Structural Engineering Department of Cornell, Howland, Hayes, and Merryfield, an engineering firm. Alexander Squire has recently been appointed manager of the newly formed Materials Department at Westinghouse Electric Corporation's Bettis Atomic Power Division, Pittsburgh.

In Oakland, I recently spent a few pleasant moments with Phil Bush, who heads up the Atomic Energy Division of Kaiser Industries. Phil has a new hobby now. He didn't say whether he was singing "Clementine" better these days or that he had made a history making discovery similar to the ones at Sutter's Mill and Klondike; however, he did say that he was "dabbling" in gold mining. I know we're all going to be interested in what comes out of this project. If it turns out to be gold, then we can ask Phil to subsidize the reunion. If it doesn't, then we ought to get some really good stories. Anyway, I'll try to stay in touch with this one and keep you informed.

In the meantime, let's be planning on the reunion. I haven't heard from Doc Wingard, but I am sure that if you will call him to volunteer some help he may discover he has need for a helper or two on that committee which hires the dancing girls. — HAL SEYKOTA, *Assistant Secretary*, 416 Calle Mayor, Redondo Beach, Calif.

## 1940

George Blair has been appointed assistant manager of the Roslindale office of First National Bank of Boston.

Rear Admiral Herman Pieczenkowski was awarded the outstanding alumnus award from the Classical Varsity Club of Classical High School of Providence, R.I. Members of the Class will recall that Herman received his master of science degree in mechanical engineering with us.

Ted Thomas is cochairman of the 1959 Red Cross campaign in Haverhill, Mass.

Wensley Barker has been appointed staff engineer for the Chandler-Evans Corporation, producers of aircraft fuel control systems. Previously Wensley had been with the Wright-Aeronautical Division of Curtiss-Wright. — ALVIN GUTTAG, *Secretary*, Cushman, Darby and Cushman, American Security Building, Washington 5, D.C. SAMUEL A. GOLDBLITH, *Assistant Secretary*, Department of Food Technology, Room 16-325, Cambridge 39, Mass. MARSHALL D. MCCUEN, *Assistant Secretary*, 4414 Broadway, Indianapolis 5, Ind.

## 1941

Spring has arrived; and with it comes the annual request for class dues, a most modest levy of two dollars per member. The two main purposes of the dues are: 1) to make possible enterprises of interest to the entire Class, such as the directory issued last year (a few extra copies are still available for the asking); and 2) to provide for a prereunion buffer in the class treasury. Reunions are expected to be entirely supported by those attending; but advance expenses, deposits, and the like are often incurred long before the reunion registration fees begin to arrive. So, mail your two bucks to me now, while you're thinking of it.

Howie Morrison passes along a picture of the outgoing president of the Connecticut Valley section of the American Rocket Society, Charlie King, handing over the gavel to his successor. Howie is with Trans-Sonics, Inc., in Burlington, Mass., and continues: "Last year was our best, and we look forward to an even better one in 1959. I've taken up membership with the American Marketing Association and attend a good many of their luncheon meetings at the M.I.T. Faculty Club. I even had the pleasure of delivering the luncheon talk recently entitled 'Case History: Successful Selling to a Prime Contractor.'"

Luke Hayden had dinner with the Colinses last week: as reported last month, he is now president of the City Savings Bank here in Pittsfield. By the time you read this, the Haydens should be well settled in their new four-bedroom split-level home on South Mountain Road (they hope to move in April 1).

Rea Stanhouse spent a Sunday with us in February; his family is still in Largo, Fla. (near St. Petersburg), while Rea is here being briefed on his new position as the Cape Canaveral representative of the General Electric Ordnance Department. He hopes to move to Canaveral as soon as school closes.

Much of the month's haul from the clipping service originates with the Sperry Gyroscope Company in Great Neck, N.Y., where Walter Mieher has been

named engineering manager of the Countermeasures Division: he will be in charge of all research and engineering activities in this line, including the multimillion dollar Air Force program now underway to equip B-52 intercontinental bombers with extremely advanced electronic jamming and missile deception equipment. Until now, he had been chief engineer of the Air Armament Division. He joined the company in 1940, and held various research posts until 1949, when he was made department head for Armament Radar Engineering. From 1955 through 1957, he served as chief engineer of the Special Missile Systems Division. During this time, he has also been a consultant to the Assistant Secretary of Defense for Research and Engineering.

Basil Staros, section head for astronautic systems in the weapon system engineering department of the Air Armament Division, has been granted a patent for an air speed measuring device which provides an indication of true air speed independent of atmospheric pressure, temperature, and Mach number. And David Kenyon, research engineer in the advanced development engineering department of the Countermeasures Division, has been granted a patent for a remote radar indicating apparatus, which is a radar data link for transmitting data derived from an azimuth scanning search radar system to a remotely located indicator.

The professional group on microwave theory and techniques of the Institute of Radio Engineers (Boston section), in cooperation with the Division of Engineering and Applied Physics of Harvard, is holding a national symposium, June 1 to 3, at Harvard. Ted Saad is in charge of local arrangements.

The I.R.E. has named William Brown to the rank of fellow, in recognition of his contributions in the field of microwave tubes. He is an assistant vice-president and manager of the Advanced Development Laboratory for the Raytheon Manufacturing Company and is an authority on magnetrons and other types of high-frequency electronic devices. Joining Raytheon in 1940, he worked on new tube types for proximity fuses, and later on high-frequency triodes for radiosonde balloon transmitters. Still later, he was placed in charge of magnetron research and development facilities. For his work during the war, he was awarded a certificate of commendation for outstanding service and a Naval Ordnance Development Award.

We are pleased to pass along an announcement of the marriage of Hilda Sagar to Dick Bartlett in Hampton, N.H. Dick is a senior engineer with C.B.S.-Hytron in Newburyport, Mass., in which city the couple is now living.

Plan to attend the biggest and best Alumni Day ever, June 15, featuring the inauguration of Dr. Stratton as President of the Institute. — IVOR W. COLLINS, *Secretary*, 9 Sunnyside Drive, Dalton, Mass. HENRY AVERY, *Assistant Secretary*, Pittsburgh Coke and Chemical Company, Grant Building, Pittsburgh 19, Pa.

## 1942

Your Secretary-Treasurer is about to take off for Florida to enjoy some sun

and sand before starting on a new project. It is perhaps not inappropriate to make these notes somewhat brief and hold the technical information until next month.

Robert H. Rines and Harry J. Heine-man, Jr., have had their photos in the Boston and Belmont, Mass., newspapers quite often of late. The special occasion is not one of crime (Bob is a lawyer) but one of the theatre. Bob and Harry wrote, produced and directed a new musical show, "Nothing So Important," for the Belmont Dramatic Club. This 56-year-old dramatic group staged the first in a series of social and civic functions to celebrate the 100th anniversary of the incorporation of Belmont as a town. (There are over 100 Alumni and a great many faculty members who are residents of the town.)

The show, a satire on Beacon Hill's Bohemian set, was a great success and played to standing room only.

There is a blizzard abroad in New England (and no crocuses yet, except in the Flower Show) as these notes are being written. Have a nice warm spring! — *Secretaries: QUINN; KEATING; EDMUNDS; and LOU ROSENBLUM, 49 Farnham Street, Belmont, Mass.*

## 2-'44

By the time this appears in print, the reunion will be just about a month away, and all of your plans will be pretty well set. However, I do want to report that the committee has been going full steam all spring, having had several meetings. The last one held in Boston is summed up by Burt Bromfield in a note; "Lots of drinks, lots of fun, and many plans." Sounds good indeed. In the same letter Burt advises that he is sorry that he will not be able to be at the reunion, now that he has gotten it going, because he is going to be in Europe. The lucky fellow will be over there with wife and three deductions on some sort of a tour. Keep us posted, Burt!

One of the plans made at the meeting noted above was that those of you who have moving picture film of the 10th reunion should bring same along. Burt is sending his footage along, and I understand he has some interesting shots! In his absence, it appears Scott Carpenter will be acting chairman, though at this writing this isn't decided. I have received a reminder from long-suffering Mal Kispert that he is in need of funds. Those of you who would like to help out, should send \$5.00 to him at 33 Sterling Drive, Dover, Mass. He needs this to set up a fund to pay for the many items of expense that come up before he starts to get reservation money. Like all treasurers, I am sure he will be very happy to hear from you. We now have 85 tentative reservations.

A number of the classmates have hit the news in the last month or so. A note advises that Gunther Baldauf has been appointed research manager of the Allied Paper Corporation located in Kalamazoo, Mich. Good luck, Gunther. Peter Elias has been elected fellow of the Institute of Radio Engineers for contributions to information theory and engineering education. He is presently associate professor of electrical engineering on the staff of Tech's Research Laboratory of Electronics. A clipping from the *Independent*

*Republican* of Portland, Maine, reports that Lester Simon of our Class has been elected vice-president and director of R. A. Ranson Company, Inc., consulting engineers serving the public utility field on a national basis. He moves to Portland from New York City where he was associated with W. C. Gillman and Company. A delayed report from the West Coast advises that at the annual meeting of the Electron Microscope Society of America meeting held in August of 1958 C. C. Hsiao of our Class gave a paper entitled "Behavior of Thin Metal Surface Films Under Electron Bombardment." While on the subject of metallurgy, *Welding Research Supplement to Welding Journal* of January carries an article entitled "Pressure Equipment for Low-Temperature Services," written by C. R. Soderberg, Jr., formulating a design basis for the use of ferritic materials in atmospheric and low temperature service.

One of my reporters, and there are far too few, advises having talked to John Taft at the Motor Boat Show in Boston. Jack is at Fore River Ship Yard in Quincy, working on the atomic destroyer project. He had hoped to come to the reunion, but will have to be in Idaho for a while just about the time the gathering starts.

The other day in looking over the list of fellows working for the Alumni Fund regional personal solicitation program, I was amazed at the number of men from our Class who are working as chairmen. Their names and their territories follow: G. Murray, Santa Clara, Calif.; W. Di-Zenzo, Fairfield, Conn.; S. Morrison, New London, Conn.; W. Richardson, Portland, Maine; A. Bryant, Arlington, Mass.; J. Mullen, Framingham, Mass.; R. Turner, Nashua, N.H.; G. Schnugg, Montclair, N.J.; E. Eaton, Morristown, N.J.; P. Heilman, Westfield, N.J.; R. Horrigan, Niagara Falls, N.Y.; J. Hull, East Montgomery, Pa.; A. Singer '48, Houston, Texas. Knowing the work involved at first-hand I wish all the fellows all the luck in the world in their respective areas. While working on the solicitation in Westfield I ran into Lawrence Dirnberger, who is located here and works with one of the nearby oil companies.

As a final piece of news, the undersigned has just been moved to Boston, where I will be located with an office in Wellesley after the 31st of March. — PAUL M. HEILMAN, *Assistant Secretary.*

## 10-'44

After a period of procrastination, here we go again, and just in time to issue a final call for the reunion week end at the Chatham Bars Inn next month. As you know from our committee, the response has been very strong; those of you who are still on the fence have a few weeks yet to send in your reservations. We'll see you on the beach at Chatham!

One letter I've received recently asks: "Why can't we, as the Class of 10-'44, have a reunion of our own?" The answer is essentially that neither 2-'44 nor 10-'44, both very much reduced in size by wartime disruptions, can draw a sufficient attendance from its own membership to organize separate, effective week ends of this type. It is still practical, we believe,

to maintain the identity of our Class and yet for convenience's sake to join with our friends in 2-'44 to make successful reunions for both Classes.

Up here in Marblehead we are not as accustomed to seeing distant visitors as those of you who live closer to the principal highways and byways of America, and this is especially true during our winter months when tourists are as rare as model T's. So it was a real pleasure to have George Quisenberry drop in on us several months ago while on a business trip east from San Francisco. Quiz was looking forward to an authentic broiled lobster dinner; and we had to blush with chagrin and offer Gulf shrimp, our lobstermen having had one of their poorest catches in many years. (Come back again, Quiz, and we'll put out a lobster pot of our own.) Quiz reported that he, Clara, and their two children are very pleasantly established in Palo Alto. Not too far away, in San Mateo, are Cort and Dorie Ames. This winter also, for the first time in many years, we saw John Woolston, now a lieutenant commander in the Navy and in charge of hull design for a class of nuclear submarines. John and his family are living in Portsmouth, N.H., where he is stationed at the Naval Shipyard. John told us that he felt most fortunate in having received his present assignment and pointed out that it was a professional opportunity he could not have expected so soon were he not in the Navy. Speaking further about career Navy men, we have a note reporting that Art Plaut now has his two and one-half stripes, with an assignment aboard the carrier *Bennington* in the Pacific.

From the business world we are happy to report new appointments or advancements for Carroll Boyce, Pete Quattrochi, Bruce Lamberton, and Tom Jackson. Carroll has become editor of the McGraw-Hill publication *Fleet Owner* after having served as manager of features and departments for *Factory* magazine. Pete left the Trumbull Division of General Electric Company last fall to become manager of customer services for Taco Heaters, Inc., of Cranston, R.I. For the past year Bruce has been the new chief engineer for Intrusion-Prepakt, Inc., Cleveland structural concrete and maintenance contractors. Bruce has been associated with his company since 1948 and had completed field assignments in this country and overseas before becoming manager of research and development in 1955. Tom has recently joined the National Research Corporation of Cambridge, and from what we hear he has apparently been given a magic carpet for world-wide travel. Also in the business world, Jack Frailey has returned to this area as missile systems manager at the Radio Corporation of America laboratory in Wilmington, and at the same time he has rejoined the Tech athletic staff as coach of the freshman heavyweight crew. You will remember that Jack was coach of the lightweight crews that won Henley Regatta titles in 1954 and 1955.

Through several of our roving correspondents we learn that King Cayce has organized his own successful business consulting firm, specializing in studies leading to acquisitions and mergers. King and Pat are still living in Cleveland, although we



understand that he has a New York office also. Another Cleveland resident is Professor Gil Krullee of the Department of Industrial Management, Case Institute. Around the Boston area are some of our more-or-less permanently situated brethren: Bud Bryant, at Arthur D. Little, Inc.; Scott Carpenter, at Godfrey L. Cabot; John Granlund, of the M.I.T. Faculty; Dick Maffei, a Marblehead next-door neighbor and also on the Tech Faculty; Jim Phillips '47, at Vance, Saunders, and Company, mutual fund underwriters and distributors; and Ray Wilding-White '45, now studying for a doctorate in music composition at Boston University.

And with these entries the recent and past notes have been reported. Next month's reunion will provide a new supply of news, however. I hope that you'll be on hand. — KENNETH G. SCHEID, *Secretary*, 24 Lee Street, Marblehead, Mass.

## 1945

March winds bring April showers bring May flowers bring class notes I hope! Yes, how about breaking up the vacuum or void in news? I am gasping for information.

George (Curly) Bickford called from New York's International Airport Friday, February 13, to say he was off on a short trip to Europe—three days in Sweden, one in Paris, and one in London—on behalf of his employer, Carrier Corporation. It was good to jaw with George a few moments, and I was especially glad to hear that Betty's knee operation last fall had been successful. Professor Harvey Brooks of Harvard will be the principal speaker at a National Symposium on Microwaves at Harvard early in June. *Science* in mid-January indicated William K. Linvill, project leader for the Institute for Defense Analysis, had joined Rand Corporation, Santa Monica, Calif., as a senior staff member of the Engineering Division's Electronics Department. From 1947 to 1956 Bill was an assistant professor of electrical engineering at Tech.

Ed Stoltz with Johns-Manville in Pittsburgh recently forwarded a Johns-Manville interoffice memo indicating that Robert D. Peck '44, Manager for Distributor Sales, had been granted a leave of absence, effective January 1, to become chairman, general manager, and part owner of Asbestos Construction Company in the metropolitan New York area. Oliver Selfridge presented a paper entitled "Pandemonium—An Approach to Artificial Intelligence" at a January meeting of the Boston section, Institute of Radio Engineers. Ray Staley is delving into the more interesting aspects of the weather down at the University of Texas. Last year he was a contributor to a new book entitled *Exploring the Atmosphere's First Mile*, published by Pergamon Press.

Glancing at the address changes briefly, Walt Borden must still be with Esso Research, for he recently bought a new home in Westfield, N.J. John Hertig moved out of Ayden, N.C., to Landenburg, Pa. Mal Crowther is back in Kansas City after several years in Maumee, Ohio. It is next to impossible for Slim Pasfield to be teaching at Trinity in Hartford, for he is living out on Long Island, in Sayville.

I have no idea what Ray Elmendorf is up to but he is out of the country again. In 1955 he was with Esso in the Mideast; the past two or three years his address was Kingston, N.Y.; now it is Koln-Klettenberg, Germany. Walter Harte is down in Baltimore after several years in White Plains, New York.

The M.I.T. Club of New York has asked that we remind you of their monthly class luncheons. The Classes of '44 and '45 meet the Wednesday following the fourth Monday, for example May 27. Jim Levitan and Reg Stoops '48 have been helping me with the Stamford regional solicitation. One evening recently we had a class meeting which consisted of a three-handed bridge game and a bottle of scotch. Do you suppose the latter is deductible as a charitable contribution? Speaking of meetings, I spent a most enjoyable evening with the Hickeys down in Moorestown, N.J. Last fall Jerry Patterson tried to tell me about the new Hickey homestead, but one must see to believe. Pete and Lou have an old "main line" mansion built about the turn of the century, complete with two acres of land, stables, and so forth. There are no horses but plenty of rabbits; in fact the Hickeys will be pleased to ship cash on delivery heirs of last year's cute Easter bunnies, in lots up to 100, anywhere in the world! Pete does not have time for golf, for all his "idle" time is spent repairing, mowing, and so forth; he eagerly awaits the day the twins can take their turn behind the lawn mower. Lou promised to take movies of Pete repapering one of the ceilings. Yes, every ceiling in the house is wall papered, not painted. Pete and Lou are anxiously awaiting our 15th reunion in June, 1960. Are you?—C. H. SPRINGER, *Secretary*, Firemen's Mutual Insurance Company, 420 Lexington Avenue, New York 17, N.Y.

## 1946

Jan and I were very pleased to be able to visit John and Nancy Taylor at their home at 4302 Wickford Road in Baltimore a few weeks ago. We were in Washington for the week end and drove to Baltimore for Sunday dinner with the Taylors. They have recently completed their house, having found a nice lot in a very well established neighborhood. They are very comfortably settled and I'm sure would like to hear from anyone traveling through the area. John is still working for Westinghouse (as anyone can tell by looking at the labels on all the brand new appliances in the house) and is working on advanced radar system designs. Arthur Y. Taylor, who took advanced degrees in 1946, has recently been named as a vice-president of Jackson and Moreland, Inc. He is a member of the American Institute of Electrical Engineers, Atomic Industrial Forum, and Committee on Nucleonics. He is a licensed professional engineer in Wisconsin, Ohio, Massachusetts, and New York. Dr. Thomas F. Malone was recently re-elected to the post of secretary, American Meteorological Society. Stephan H. Crandall is the editor of a recent Technology Press publication, *Random Vibration, Notes for the M.I.T. Special Summer Program*.

We received a nice letter from Norm Sas a few weeks ago in which he informs us of the arrival of their second offspring: a son, Wayne. Their New York apartment is now too small, so they are building a home in Alpine, N.J. Clarence S. Lyon is now a close neighbor of mine, having moved recently to 4 Prince Avenue, Winchester, Mass., from his former home in Stamford, Conn. He is now practicing patent law with the firm of Kenway, Jenney, Witter, and Hildreth in Boston. The Lyons now have two daughters.

A few months ago while waiting for the helicopter at a New York airport I spotted Mort Bromfield and his wife racing by on their way to catch a plane. Mort has his own management consultant business, Bromfield Associates, 175 Huntington Avenue, Boston. Mort says that he has developed a process to assemble and finish men's and women's shoes in approximately 15 minutes. He is now looking for a partner, someone who already has developed a process to wear them out in the same length of time; and he figures that the combination should revolutionize the industry. Ford Park went back to M.I.T. to get his S.M. in mechanical engineering in 1950; worked for five years with Union Carbide Corporation, as a design engineer on liquid oxygen equipment; and is now associate editor of *Product Engineering* magazine, a McGraw-Hill magazine of design, research, and development. His job includes the writing and editing of technical articles in the field of engineering materials and production processes. The Parks have three children and live at 100 Glendale Road, Park Ridge, N.J.

Another engineer turned journalist is Robert H. Marks, who is assistant editor of another McGraw-Hill publication, *Power* magazine. His specialty is covering the technical areas of fluid handling, water treatment, corrosion, and engineering materials. His special report on water treatment appeared in the December issue. Before joining the magazine, Bob was sales and application engineer for Permutit Company, specializing in water treatment. Bob is still single and lives at 325 Clinton Avenue, Brooklyn 5, N.Y. Morton Goldfarb is a physician specializing in urology. He has three children and lives at 105 Grover Avenue West, Massapequa Park, N.Y. Fred Goelzer is project manager of the Missile Ground Support Equipment Group of Associated Missile Products Co., a division of American Machine Foundry Company in Pomona, Calif. The Goelzers have four children and live at 1444 North Mountain Avenue, Claremont, Calif. Roy L. Klein is manager of design and construction projects for petroleum, petrochemical, and chemical industries for Tears Engineers, a Dallas, Texas, firm. Roy is married, has two children, and lives at 820 Westwood, Richardson, Texas. Robert J. O'Donnell is a research engineer in petroleum refining for California Research Corporation. He was formerly located in El Segundo but has been transferred to their Richmond, Calif., plant. Bob has two sons and lives at 2190 Danberry Lane, San Rafael, Calif.

Stephen J. Siegl, Jr., is an engineer with the firm of L. W. Perkins and Son, civil and consulting engineers in Hingham,

Mass. He is a registered professional engineer in Massachusetts and Rhode Island, and his major activities are in residential developments. He is married, has three children, and lives at 16 Independence Lane, Hingham, Mass. Jim Craig is now a vice-president, Hotel Division, of the Hotel Corporation of America, and is director of purchasing and food staff. Jim lives at 4 The Valley Road, Concord, Mass. My own job has recently changed. Upon the resignation of Herbert Marcus, M.I.T., '48, to go into the engineering consulting business with his brother, I have switched from my previous job as staff engineer to Herb's old job as chief product engineer of the Boston division of the Minneapolis-Honeywell Regulator Company. The job title is a sneaky way of disguising 1,001 headaches. Look for us next month in this same location. With luck we'll be here. — JOHN A. MAYNARD, *Secretary*, 15 Cabot Street, Winchester, Mass.

## 1947

Mort Loewenthal, one of our regular reunion attendees, saw me at the Los Angeles International Airport, while I was waiting for an arrival of one of our company executives; and he was as surprised at seeing me there as I was to see him. Evidently my readership in *The Review* still leaves a little to be desired, as he wasn't aware that your Correspondent does long-range reporting, although my address is at the end of each message that's in. Mort is with Lincoln Laboratory at present, in a position analogous to that of a traveling salesman, visiting scientific prospective customers in southern California. He was in the area for a few days, and we were able to get together for dinner while he was here. Let this be a notice to all lonesome travelers to the sunny southland; my address is at the end of this blurb; and even if I don't know you personally, there are undoubtedly other readers who'd be interested in what you're doing — so inform me!

News is rather sparse in quantity, but what there is contains information of more than passing interest. Norm Holland, our first Alumni class president, is a television star in the Boston area; W.G.B.H.-Television is the station from which he conducts his critiques on movies. Using the hypothesis that movies are today's equivalent of Elizabethan Theatre, he is acquiring a Trendex rating second only to Phil Silvers, I understand. During his off-camera hours, he can be found in the Humanities Department, or in the dormitories, where he is Faculty resident. Dr. Sam Mason, who received his S.M. in 1947, was named one of 10 fellows of the Institute of Radio Engineers in the Boston area. Sam has been in the Institute family since 1942, when he started work as a staff member of the Radiation Laboratory; he is now associate professor on the Faculty.

Changes of address follow: Arizona: Scottsdale, Bertram H. Julier. Florida: Clearwater, Vernon J. Sholund; Orlando, George H. Sprague, Jr.; West Palm Beach, the Reverend Robert Pollard, 3d. California: Arcadia, Robert M. Walp; Burlingame, Major Vernon K. Sanders; Carmichael, Dana C. Chase; Coronado,

Commander Hubert P. Wirth; Lancaster, Major George F. Schwartz, Jr.; Los Angeles, David Joseph; Northridge, David W. Bareis; Palo Alto, Lieutenant John T. Wells; Rolling Hills, Dr. Marvin W. Sweeney, Jr.; San Francisco, Dr. William Enkeboll, Frederick H. Howell, Jr. (A.P.O. 63), Major John T. McCabe (A.P.O. 925); Shingle Springs, Arthur J. Enzler; Venice, John D. Goldson. Connecticut: West Simsbury, Robert C. Mack. District of Columbia: Navy Department Bureau of Ordnance, William R. Kurtz. Indiana: Indianapolis, Mrs. Spiros G. Pantazi. Illinois: Evanston, Paul F. Rice; Great Lakes, Lieutenant Commander Earl C. Iselin, Jr.; La Grange, George Brown. Kansas: Merriam, Dr. Arthur F. Helin. Maryland: Baltimore, Israel M. Cramer; Bethesda, Commander William H. Cullin; Cockeysville, Warren A. Hurley; Towson, James O. Davis, Jr. Massachusetts: Allston, William E. Boyle, Jr.; Boston, Vergel E. Liles; Concord, George C. Sweeney, Jr.; Everett, Edwin S. Lawrence; Hingham, Commander James A. Dare; Longmeadow, Edward W. Forth; Weymouth, Harold E. Burton. Michigan: Ann Arbor, Robert D. Carpenter; Royal Oak, Arthur Leslie. Minnesota: St. Paul, Herbert C. Wieland. New York: Buffalo, Alan W. Ker; Manhasset, Pavle Sancer-Santick and John A. Contegni; New York, Commander Howard H. Montgomery (A.P.O. 230), Colonel John U. Allen (A.P.O. 58), Robert L. Mitchell. New Jersey: Livingston, I. Joel (Moose) Feldstein. North Carolina: Fort Bragg, Lieutenant Colonel William L. Starnes. Oklahoma: Fort Sill, Captain John R. Walker. Pennsylvania: Bala-Cynwyd, Oliver W. Hamilton. Rhode Island: Warwick, Walter Kisluk. Virginia: Alexandria, Colonel Thaddeus M. Nash; Arlington, Commander John F. Refo. Washington: Spokane, John W. Leonard, Jr. Wisconsin: Elm Grove, Edward C. Doyle. Panama: Panama, Isidro Fong; Balboa, Frank X. Zeimetz. — ARTHUR SCHWARTZ, *Secretary*, 8355 Blackburn Avenue, Los Angeles 48, Calif.

## 1948

Much of this month's class news is from '48 men who have earned their doctorate degrees.

Dr. Charles B. Reimer will establish a new electron microscope laboratory to further his studies of the biophysical aspects of cancer and virus diseases, as well as for other research, at Eli Lilly and Company. Before his recent move to Lilly, Charles spent five years at Johns Hopkins University as a research associate and fellow in surgery with the Finney-Howell Cancer Research Laboratory.

Dr. Edward R. Funk has received the Distinguished Service Award as "outstanding young man of the year" from the Wooster, Ohio, Junior Chamber of Commerce. Ed Funk, who has written a book on welding, is president of the Johnston and Funk Metallurgical Corporation.

Dr. Malcolm W. P. Strandberg, now an associate professor at M.I.T., has been named a fellow of the Institute of Radio Engineers. Like Dr. Funk, he too

has written a book; his is entitled *Micro-wave Spectroscopy*. The Institute of Aeronautical Sciences presented the Lawrence Sperry Award for "outstanding young man in aviation" to Robert G. Loewy, chief technical engineer at Vertol Aircraft Corporation of Morton, Pa.

George A. Lydotes is coinventor of the equipment produced by Technomatic, Inc., of Boston for automatic shoe production. His invention is an important contribution to an industry which has lagged behind in the technology of automatic materials handling. Also from the shoe industry, Ralph L. Wentworth has been named manager of the Shoe Products Research Department at Dewey and Almy Chemical Division of W. R. Grace and Company. Ralph stayed on at M.I.T., doing research, following graduation until he joined Dewey and Almy in 1957.

Arthur J. Renz has been named sales manager for the new \$600,000 Split Ballbearing plant which recently opened in Lebanon, N.H. Art also serves as area Educational Counselor for M.I.T. Bascom W. Birmingham is chief of the cryogenic equipment section at the National Bureau of Standards' Boulder, Colo., laboratories. He recently published a technical report on the feasibility of transporting helium over long distances in liquid form, representing a study of current significance to national defense.

Just before going to press we received a letter from Mrs. Albert G. Dietz whose son now attends Hebron Academy where Bob Mott heads the mathematics department. Mrs. Dietz reports that Bob, who has been very faithful to the Class of '48 and is currently assistant secretary, was in a rather serious ski accident. We know that Bob will enjoy hearing from his many friends during his long and confining convalescence. — HERBERT S. KINDLER. RICHARD H. HARRIS, *Secretary*, 26 South Street, Grafton, Mass. HARRY G. JONES, *Assistant Secretary*, 94 Oregon Avenue, Bronxville 8, N.Y.; HERBERT S. KINDLER, *Assistant Secretary*, Instrument Society of America, 313 Sixth Avenue, Pittsburgh 22, Pa. ROBERT R. MOTT, *Assistant Secretary*, Box 113, Hebron, Maine.

## 1949

The 10th reunion bandwagon is really rolling. The following are definitely planning to be at our '49ers' conclave June 12 to 14 in Lenox, Mass.: Frank Anthony, Tony Armenante, Jack Baker, John Barriger, Lou Basel, Leon Baum, Ed Berly, Jim Berman, Bill Birnbaum, Dave Breed, Bob Brown, Pete Cambourelis, Bruce Campbell, Jim Catel, Jack Chaddock, Jim Christopher, Gene Clark, Alan Collins, Jack Cook, Russ Cox, Frank Darcy.

Also: Dick Davidson, Charlie Davis, John Delaney, Minas Deranien, T. J. Devine, Frank Dinneen, Vernon Dougherty, Ira Dyer, Earl Eames, Fletcher Eaton, Bill Edgerly, Gates Falabella, George Freund, D. L. Gillespie, Jim Gordon, Hal Green, Bob Griggs, Jerry Grott, Dave Hardin, Stoney Harford, Archie Harris, Bill Heintz, Howie Hendershott, Tom Hilton, Randie Hogan,



Ray Homan, Larry Holt, Chuck Holzwarth, John Horton, Bill Howlett, Frank Hulsmit, Hal Ingraham, Charles Jackson, Paul Johnson.

Plus: Bud Jones, Charlie Jordan, Hal Keene, Ken Kelton, Bob King, Dave Klaiman, Art Knauer, Geraldine Kunstadter, Mal Kurth, Harry Lambe, Kermit Lambert, Bob Lannamann, Ed Lanpher, Ray Larson, Mary (Cretella) Lavine, Andy Lemmens, Jeremy Lewi, Bill Lewis, Bob Lincoln, G. P. Loomis, Emmert Lowry, Joe Lynch, Mickey McConaughy, Ken McGrath, Harold McInnes, Leonard McKibben, George McQueen, Stan Margolin, Frank Marran, Gregor Meyer, Howard Millard, John Miller, Tom Moranian, George Motzenbecker, Pete Murphy.

In addition: Herb Neitlich, Len Newton, Ruth Norton, Bob Pereles, Abraham Perez, Dick Perley, Lindsey Perry, Dick Pitler, Stu Powell, Dave Powers, Howard Reuter, Paul Reynolds, Walter Row, Woody Rowles, Sam Sabbagh, Frank Sayles, Mike Scholnick, Walt Seibert, Horton Shaw, Ed Somma, Dick Spencer, John Stevens, Ivar Stockel, Charles Sutherland, Garland Sydnor, Kemon Taschioglou, Harrison Thibault, Tom Toohy, Bill Troy '48, V. P. Turnburke, Tico Venegas, Jim Veras, Joe Vitka, Bob Walton, Ed Walz, Tom Weil, Dick Witherell.

If your name isn't already listed here, you'll have to hurry. To recap the reunion schedule: arrival June 12 during late afternoon and evening into a full-blown Monte Carlo setting complete with roulette, blackjack, and crap tables; a bar handy; and dancing to records. On the 13th (Saturday), there will be time for tennis, softball, or a swim in the heated pool. A fashion show is among the activities planned for wives. A cocktail party will precede an evening banquet at which class statistics will be reviewed. Following dinner there will be an orchestra for dancing. On Sunday the 14th, plans are for a couple of round table discussions; one on "Starting Your Own Business." Plenty of elbow room in the schedule, too, for renewing acquaintances and seeing the surrounding countryside. By now you should have received one or more flyers on how to join this happy throng. Send that \$3.00 class dues along, too.

We have been asked and are glad to comply with a request from the M.I.T. Club of New York City to mention that the regular luncheon meeting for Classes 1940-1949 is the Friday following the fourth Monday of every month. Our luncheon sponsor is Tom Toohy, who can be reached through International Business Machines MU 8-6300. In addition to the alumni luncheon meetings held there, an excellent series of technical and social events is scheduled.

Bill Atkinson is now project engineer for the fleet ballistic missile (Polaris) for submarines. Jan Hoegfeldt is now production development metallurgist at the Wrought Alloy Plant, Haynes Stellite Company, division of Union Carbide. Wally Hyde is now section head for test instruments at the Donner Scientific Company and lives in Concord, California.

Austin Marx is now living in East Orange, N.J. Buff ('51) and Marlene Banister of Oakland, Calif., were married last June. He was recently appointed eastern district manager, Beckman Instruments, Inc. Claire C. Simeral, Jr., was recently named manager of microwave tube operations for the Electron Tube Division of Radio Corporation of America. Dr. Dewey J. Sandell, Jr., has been appointed to the M.I.T. Educational Council in the Syracuse, N.Y., area. Dr. Sandell is director of research for the Carrier Corporation.

Dave Hardin has been named executive vice-president of Market Facts, Inc., in Chicago. For four years Dave has been vice-president, having been associated with Market Facts for nine years in all. Dave now lives in Wilmette, Ill. He and his wife Diane welcomed their first child, Nancy, last May. The Hardins are planning to be at Lenox next month.

John Klein was recently appointed assistant professor of mathematics at Wilson College in Chambersburg, Pa. The Longmeadow (Mass.) Maternal Association recently heard Tom McNulty give a talk on "An Architect's View of Europe." The University Club of Malden, Mass., enjoyed a recent talk given by Joe Murphy about his trip to the West Indies. Joe is a senior engineer at Boston Edison and is well known for his talks on England, Ireland, and other European countries.

We regret we must close our notes this month with the news of the death of Orville Mills last January in Warwick, N.J. Orville transferred to Tech from the University of Oklahoma and was elected a member of Tau Beta Pi. At the time of his death he was working as a chemical engineer for Lever Brothers. — O. SUMMERS HAGERMAN, JR., Secretary, 8519 Pringle Drive, Cincinnati 31, Ohio.

## 1950

Eli Goodman has been awarded the first annual meritorious achievement award of the Pittsburgh chapter of the American Nuclear Society. Eli specializes at Nuclear Science and Engineering Corporation as consultant on radioactive waste disposal systems and industrial applications of radioactivity. Eli and his wife Arlene have two boys: Mattie, three, and Craig, one. Being an area representative, Eli has done a good job of contacting '50 classmates in the Pittsburgh area. You can contact him at his home, 123 Norrington Drive, or P.O. Box 10901, Pittsburgh 36, Pa.

This month's batch of news was put together by Eli from information he has gathered: "Harry Raab has been promoted to the position of manager, enriched core nuclear design in the Atomic Power Division physics department. In this capacity he is responsible for cores at the Naval reactor facility in Idaho, and for the cores for the Enterprise and the Long Beach. Joseph Dillard joined the Westinghouse Corporation in Pittsburgh as an electric utility engineer in 1950. He was made supervisory engineer in the Analytical Department in 1955, and in this capacity he was responsible

for analog and digital computer studies of power system problems. In March, 1956, he became manager of Electric Utility Engineering, his present position. William Farmer is working for the United States Steel Corporation, and he has been in the Pittsburgh area for about two years. The Robert Koches announce the birth of a new son, Donald Lyle, on November 17, 1958.

"Bruce Shakely and family (wife and three children, two, six, and eight years) are living in Beaver, Pa. Bruce is employed as research mechanical engineer at the Midland Research Laboratory, Crucible Steel Company. He specializes in research on rolling, forging, drawing, and similar metal-working processes. August Doering, married with two boys ages four and one, has done some graduate work at Brooklyn Polytechnic Institute and New York University and right now is working as research chemist for U.S. Rubber Company in their new central research laboratory at Wayne, N.J. John Swick has been working at Hammond Iron Works as design engineer for the past five years. John is still single and lives at home in Warren, Pa. Milton Hulme, Jr., is working as an assistant to the president, Mine Safety Appliances Company in Pittsburgh. He is married and has two boys, ages four and two. Richard Jones has been working at Westinghouse Atomic Power Division since 1950. Last June, Dick was in California for tests aboard the nuclear powered submarine U.S.S. Sargo. Dick and Janice and four children — Chuck, eight; Dave, seven; Nancy, four; and Tom, one — have a Cape Coddish address (465 Nantucket Drive) way out in Pittsburgh, Pa."

Looking forward to seeing some of you on Alumni Day, June 15; try to make it. — JOHN T. WEAVER, Secretary, 24 Notre Dame Road, Bedford, Mass.

## 1953

Apparently, we have the most non-literary class on record! This conclusion was reached after considering the vast number of letters that *weren't* written during the course of a year. But don't forget, you can become *famous*. All you need to do it write me a note, and I guarantee that your name *will* appear in print!

Another bachelor gone. This December, Joseph Moore and Madeline Carey were married in Bedford, Mass. Madeline formerly worked for the M.I.T. Lincoln Laboratory, and attended St. Agnes Seminary in Brooklyn. Joseph has an engineering and surveying business in Bedford, and has been a member of the Bedford Planning Board. Though presently living in Lexington, they will move into their new home in Chelmsford this April. Roger Johnson, still a bachelor, dropped by to say "Hello." He received his degree in February, though he still remains faithful to the Class of '53. (He came back to Tech after more than four years' service, the majority of which was spent with a commission. Also, I just found out that Alex Pasztor was at Officers Candidate School with Roger. Alex is presently with the General Elec-

tric Computer Department in Phoenix, Ariz.) At any rate, Roger is scouting around for the best job offer these days. Ed Stolfer is still around town and is presently with the Corps of Engineers (in a civilian status), Soils Engineering Laboratory, Murphy General Hospital, here in the Boston area. Ole Ed is tinkering around with "dangerous thoughts," and wants to get back to Europe for a year or so. Good Luck, ole man, we'll miss you.

Bob Rivers is doing big things these days. The Professional Group on Microwave Theory and Techniques, in co-operation with the Division of Engineering and Applied Physics of Harvard University, is holding a national symposium this June at Harvard, and Bob is serving as publicity chairman for the mammoth event. Another active classmate is George Fuld. In addition to his teaching (professor here at M.I.T.) and research, he is writing a book with two others entitled, *Engineering Principles of Fermentation Processes*. To fill up his spare time, George has also opened a consulting business (concerned with pressurized food) in Boston with some other associates.

I saw Jean-Pierre Radley and Tom Faulhaber recently at a "live-it-up" type dance. Didn't have a chance to find out what J.P. is doing. I will try to get details before the next issue of this gospel. Tom apparently has been busier than usual, even to the point of canceling his skiing vacation! He hopes to fit in a trip to snow-covered slopes before the thaw sets in.

Paul Shepherd and I have been attempting to co-ordinate with the Class of 1954 reunion activities and stage a joint 1953-1954 night just prior to the '54 reunion week end this June. Preliminary planning calls for a gathering at the M.I.T. Faculty Club on Friday night, June 12. Actually, we are hoping that many of you—particularly those in the Boston area—will get together with us that evening. If you think you can make it, drop either Paul Shepherd (16 Scout Hill Road, Reading, Mass.) or me a line. We are hoping that it will be a successful venture and that we can stage a similar affair each year. It will be a pay-as-you-go evening with no red tape involved. I do hope to see you and your wife or girl friend.

Just got a letter from Don Pickles which I'll include. (Wasn't there a story about your company in *Reader's Digest*, Don?) At any rate, he said: "I got sick of watching Thiokol's stock go up on the Stock Exchange, so joined them December 1 to find out what the story was. Turns out that this plant out here is really growing and there are lots of opportunities. At present, I'm a process engineer on a project concerned with development of a continuous propellant process. Some traveling, good pay, and close to the best skiing in the U.S.!! We (Katherine and I) now have two girls—Dawn, 18 months, and Barbara, 2 months. We are all well and enjoying Utah a lot." (They are living in Brigham City, Utah.) —MARTIN WOHL, *Secretary*, Apartment 8-18C, 100 Memorial Drive, Cambridge 42, Mass.

## 1954

With our reunion just a month away, Chairman Bob Anslow and his crew have just about completed plans and arrangements. As this column was being written (in early March) 40 members of the Class had already indicated that they intend to be among those present, so it looks as if we should have a good turnout. Everybody undoubtedly knows the details of the affair by now, but we might repeat the basic items. We are gathering at the Cliff Hotel in North Scituate, Mass., on Saturday and Sunday, June 13 and 14. Those who arrive early can join the informal get-together in Boston on Friday night. Reunion activities include sports events, a cocktail party, banquet, and dancing on Saturday; and breakfast, relaxation and a New England clambake on Sunday. It promises to be a most enjoyable time for everyone.

We have a few prereunion news items to pass on. Frank McKee is now gainfully employed in the Los Angeles sales and engineering office of the Barden Corporation, operating as a product engineer. Gerry Perlstein is teaching mathematics at the Oak Bluffs School in Boston. Arnold Tubis has been appointed assistant professor of physics at Worcester Polytechnic Institute, after several years as a research and teaching assistant at M.I.T. Al Vinal has climbed to the position of staff engineer, Digital Circuits Department, in the Owego, N.Y., plant of International Business Machines Co. Al is now married and has a son.

On the social side of the news ledger, we have word that Dan Farkas and Alice Brady of Cottage Grove, Ore., were married on January 25 in the M.I.T. chapel. Dan and Alice are living in Brookline, Mass., while Dan finishes his Ph.D. work at Tech. The Farkases, by the way, are among those planning to be at the reunion. Also at the reunion will be several newlyweds and at least one prominent almost newlywed. When the Class gathers in mid-June, your "mathe-matician secretary" will have been married to Marcia Duffy for two weeks; Dick Hayes and Ellin Donoghue will have been married for a week; and Dean Jacoby and Judy Haywood will be about to take the big step. (We're not sure about Dean's wedding date, but we have been led to believe that it is in post-reunion June.) And according to Rog Griffin, Jack Graham is also planning a June wedding.

We end this month's brief set of notes with Dave Dennen's comment that Jim Astrue, who is fantastically rich as a result of his appearances on Tic-Tac-Dough, ought to treat all of us to the reunion. We have no further remarks to make on this matter, but we are hoping to see all of you in North Scituate next month. —EDWIN G. EIGEL, JR., *Secretary*, 3654 Flora Place, St. Louis 10, Mo.

## 1955

This is meager, and we know it's not because '55 classmates are do-nothings. A

short while ago your male correspondent received a frantic note from your female same. Included were two newsworthy items and the declaration, "If you can make a column out of this, you're better than I." Well, I figured that there was nothing else to do but start the assembly line. This means telephoning all the classmates in sight in search of suitable gossip. I finally got up a good-sized spiel, only to be informed that, "At this late date, we can only accept 17 lines for The May Review from you."

This is the result of a 17-line effort to motivate you characters into dropping Dell or myself a card once in a while so that the notes don't have to be "manufactured" with the same stars in the cast each month. With your help, we shall have a gigantic column next month, and no need for lectures. —MRS. J. H. VENARDE, *Secretary*, 107 Mullin Road, Wilmington 3, Del. L. DENNIS SHAPIRO, *Assistant Secretary*, 15 Linnaean Street, Cambridge 38, Mass., ELiot 4-4901.

## 1956

All signs seem to point toward this as an extremely bad month for news of any sort. Here in Montreal, the February snows are just turning into March slush, and the entire scene is quite unappealing. Judging from the microscopic pile of mail I have received in the past month, most of you have found the month uninspiring as well.

Charles Greene has returned to the U.S. after spending three months at the Amundsen-Scott International Geophysical station at the South Pole. He had been collecting data associated with the ionospheric physics program being carried out during the International Geophysical Year. Almost immediately upon returning to our somewhat fairer clime, Charles was married to Barbara Bloom of Worcester, Mass. Barbara, a Smith graduate, has worked for some time as a secretary in the Geology Department at Tech.

In the other wedding I have to report for this month, Lois Ann Lane of Rahway, N.J., was married to James McGrady on January 31. Jim is currently working for the American Cyanamid Company, in Linden, N.J.

A card from Larry Jacowitz informs us that he has completed his master's in chemical engineering at Ohio State, and is now embarking on his Ph.D. At the same time, he is working for North American Aviation. Paul Abrahams writes that he is working in the M.I.T. Graduate School, doing research on artificial intelligence. His current project: "Getting the I.B.M. 704 to play a good game of chess." Paul is currently rooming with two other Tech men, Bob Rosenbaum'57 and Bill Levison'58.

Bob Malster has returned to the Boston area from Kansas City, and settled in Concord. Bob is now doing production supervision in the Film Division of Polaroid, in Waltham. John Cardinal is now with the Nuclear Fuels Division of Olin Mathieson, in New London, Conn. Moving westward, Phil Battaglia has joined our service group, and is now stationed at Williams Air Force Base in



Arizona. Far to the north, Georges Lafontant is working with Manitoba Hydro somewhere in the far northern wilds of Manitoba. I've tried to pin down where he is, but the best estimate I can get is "about 500 miles north of Winnipeg."

Anyone interested in a foreign job? Two and a half years north of the border have made a reasonably good pseudo-Canadian out of me. This seems to be a reasonably appropriate time to pass on some of my impressions. As is true of any place, there are both advantages and disadvantages to living in Canada. On the positive side, the taxes are lower, there is less governmental restriction, a more general interest in world affairs among the people, and the higher level Canadian Broadcasting Company television. If you approve of federal aid programs, Canada has them aplenty; for education, road construction, and so forth. There is even a modified socialized medicine plan coming in, as well as a monthly allowance for each child you have. Finally, the nation is expanding tremendously (a 25 per cent population increase in the past 10 years), and there should be ample opportunity to get ahead in a wide variety of fields, especially those located in the western provinces of Manitoba, Saskatchewan, Alberta, and British Columbia.

On the debit side, prices on most manufactured goods are higher than in the U.S.; and consequently the cost of living is somewhat higher than for comparable areas south of the border. If you appreciate the cosmopolitan variety of big city life, you will find that most of Canada is pretty far removed from such cultural advantages. The nation as a whole is far more Victorian in its morality than the U.S.—in many cities men and women are not permitted to drink together in public. Actually, I could go on indefinitely listing advantages and disadvantages, but I'm sure you get the point. Frankly, I feel that the advantages outweigh the disadvantages.

As for job opportunities, my own interests tend to restrict my information. I infer that there are a large number of openings for qualified engineers of all sorts, but that the salary scale tends to be somewhat lower than that of the U.S. As for research positions, they seem to be just as desirable as those in the States, but there are far fewer of them. On the academic side of things (my own interest), most large Canadian universities are currently offering as much as or more than comparable American institutions. In closing, remember that a Tech man (C. D. Howe'07) became the Deputy Prime Minister of Canada.

By the time you read this, June 15 and Alumni Day will be almost upon us. Last year the Class of '56 had a woefully small representation. Considering the rather large contingent that is still in the Boston area, we should be able to do better this year. So—mark off June 15 on your calendar: the Alumni Day activities this year promise to be of special interest.

As a further note to those in the Boston area, Jack Saloma is now serving as

our correspondent there. Jack's address is 27 Lawrence Street, Cambridge.—M. PHILIP BRYDEN, LIEUTENANT BRUCE B. BREDEHOFT, *Secretary*, AQ 3067617, 794th AC and WRON, A.P.O. 345, Seattle, Wash. M. PHILIP BRYDEN, *Assistant Secretary*, 3684 McTavish Street, Montreal 2, Quebec, Canada.

## 1956G

Vincent Sferrino has taken the former Deanne Frances Dario of Arlington, Mass., as his bride. The nuptials took place this past fall in St. Agnes Church in Arlington. The new Mrs. Sferrino is an alumna of Lasell Junior College. Wylie S. Robson, a Sloan fellow from Tech, has been made assistant to the director of sales administration at Eastman Kodak. Carl Osterreich has received a promotion to lieutenant commander. Carl is an aeronautical engineering graduate and a career Naval officer. Joe Taylor, a former familiar face in the Concrete Design Laboratory, is now living on Depot Street, Westford, Mass. John M. Wynne has been appointed as director of the executive development programs for the School of Industrial Management. At the University of Alberta, Canada, Peter Glockner has been elevated to the rank of professor.—LIEUTENANT (J.G.) CHARLES T. FREEDMAN, *Secretary*, U.S.S. *Independence*, CVA-62, W Division, F.P.O., New York, N.Y.

## 1957

Mal Jones writes that as of last December he entered the Air Force with a very unusual assignment. Mal is stationed at Fort Meade (Army) working for the National Security Agency (intermilitary agency) with Air Force, Army, Navy, Marines, and civilians all mixed together. After graduation Mal stayed at Tech another year to pick up an S.M. in Course XIV. In addition he had a research assistantship at the Computation Center programming the I.B.M. 704. For those of you in the area, Mal's off-base address is now 3513 Toledo Terrace, Hyattsville, Maryland.

Double M.I.T. wedding: Marianne Maguire'57 to Bob Kerwin'58. The Kerwins will live in Pittsburgh. Last Christmas Jay Hammerness had so many people to write that he sent out mimeographed letters. Jay mentioned that he spent a fifth year at Tech picking up two degrees in the process, an S.B. in Course II and an S.B. in Course XV. After this he reported to the Corps of Engineers for six months and was building a three-mile railroad at Ft. Stewart, Okefenokee Swamp, "Pogoland." What Jay didn't mention in his December letter was his February 15 engagement to Sarah (Sally) Graves of Brookline. Sally, a Wellesley graduate, is currently at the Boston University School of Education and plans to teach. Jay will work for the Budd Company in Philadelphia.

Jim Slattery is going for a history degree at Boston University and has grown a beard in preparation for a career as a teacher. Toni Schuman (nee Deutsch) sends us a copy of Mother Toni's Handy

Dandy Little Cook Book for Impecunious Bachelors and Otherwise Hungry Waif-Types. Copies of the above can be obtained by writing the author, who receives mail at 13 West Street, Cambridge, Massachusetts.

The Philip Plutas had an addition, Philip Steven, born October 25. Phil is now studying for his doctorate in nuclear physics at the University of Michigan, where he received his master's degree last June. Ralph Brown was married to Barbara Forman on September 7. Ralph writes: "Barbara and I spent our honeymoon at Nantucket and are now living in Ann Arbor. I got my M.S. last June and am currently working for a Ph.D. at the University of Michigan. Last summer I worked for Standard Oil Company of Indiana in Whiting. I did development work for their subsidiary, Amoco Chemicals. I have some news about other classmates: Dan Borenstein is now in medical school at the University of Denver. Bob Rosin is here doing graduate work in the Psychology Department. Al Hoch is married to the former Carol Kidheardt and they are living in California. Dave Chonette is married and living in California. Art Aronson'58 is working for Nuclear Metals in Cambridge. Herb Klei is here working on his doctorate. Bob Rosin and I have added up the number of people here we know who graduated from M.I.T., and there are about 30 to 40 at University of Michigan. Bob is having a party next Friday night and many of them are being invited, so it may be the beginning of the M.I.T. Club of Ann Arbor. Bob shares a house with three other men including Larry Flanigan'58."

Speaking of Bob Rosin, Rosie writes: "Don Lewis'58 stopped in several week ends ago on a buying trip (buying customer's dinner) and we had a ball. Larry Flanigan is here for an M.S. in mathematics. I am seriously thinking of starting an M.I.T. club in Ann Arbor just for drinking, if nothing else." For all you alcoholics, Bob's address is 1014 Vaughn Street, Ann Arbor. Ralph's address is 909 Packard Road, Ann Arbor. Speaking of Don Lewis, he writes of his wedding last October 26 to Nancy Rae Regal of Birmingham, Ala.

Speaking of parties we had one at the M.I.T. Club of New York several months ago, and those present included Mort and Barbara Rosenstein, Jerry and Bobbie Marwell, Hank Salzhauer, Jack Safirstein, and Ernie Wasserman. Mort Rosenstein is with Combustion Engineering in New York. Ernie Wasserman is with Worthington Corporation. Ernie is now handling our monthly luncheons at the club in the Hotel Biltmore, which occur on the first Wednesday following the first Monday of each month. For those of you in the New York area interested in attending, Ernie's home phone is ES 7-4405. I have had a change of address. Andy Blackman and I have taken an apartment with plenty of extra floor space for visiting firemen who care to sack out for the night. If you're in town, call up and come over for cocktails.—ALAN M. MAY, *Secretary*, 530 East 84th Street, New York 28, N.Y. MARTIN R. FORSBERG, *Assistant Secretary*, 383 Harvard Street, Cambridge, Mass.



# AN EXPANSION ENGINE FOR POWER RECOVERY FROM HIGH PRESSURE LIQUIDS

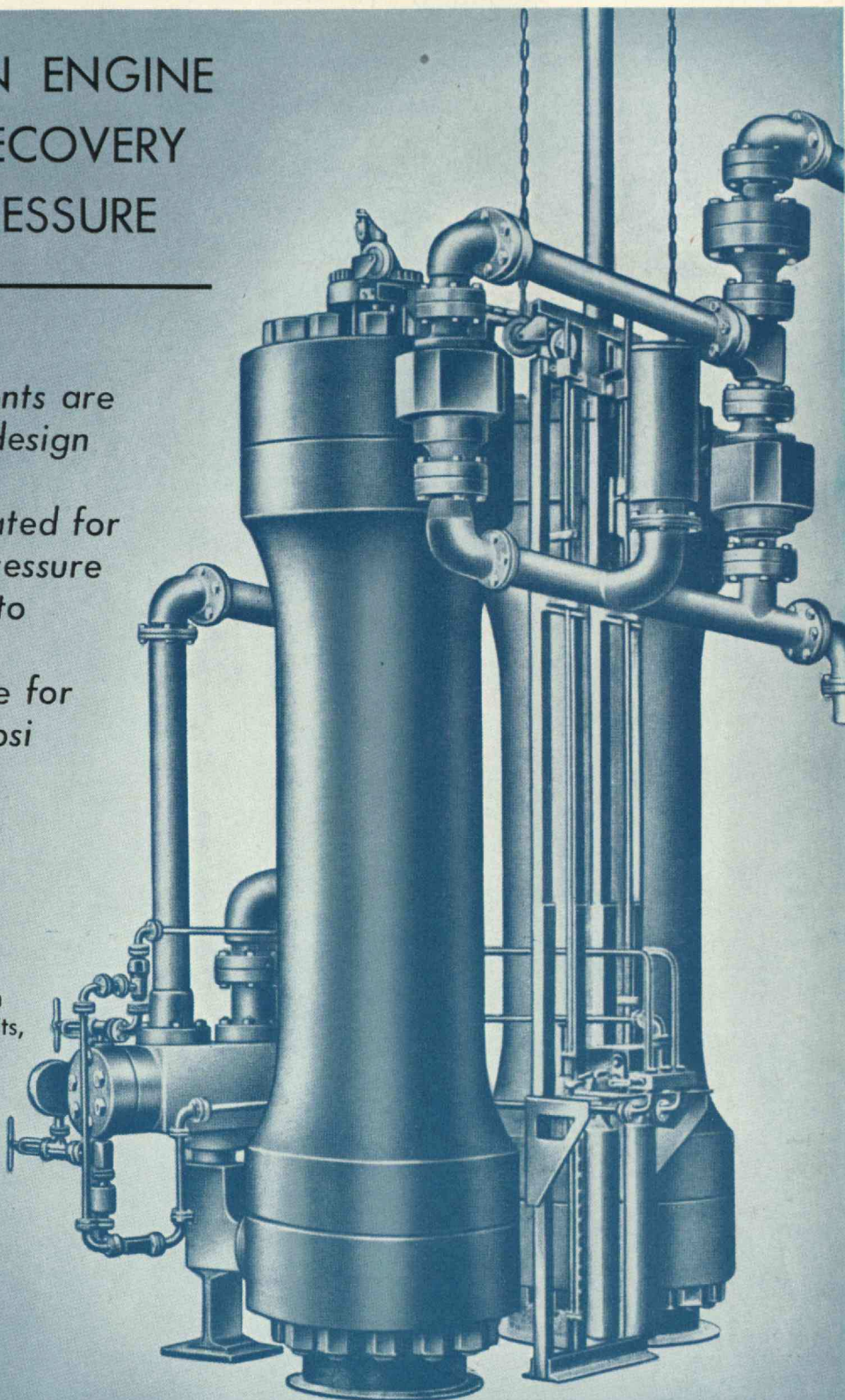
---

*The latest developments are incorporated in the design of this equipment.*

*It should be investigated for use wherever high-pressure liquids are released to lower pressure.*

*Engines are available for pressures to 10,000 psi with power recovery as high as 85%.*

We also offer special high-pressure equipment for synthesis and coal and oil hydrogenation. We can furnish high-pressure fat processing units, pilot plants for extremely high pressures, as well as high-pressure autoclaves, pumps, compressors, electric furnaces, heat exchangers, valves and fittings, closures, testing equipment, and manually operated test pumps.



CHEMICAL  
PROCESS  
DESIGN

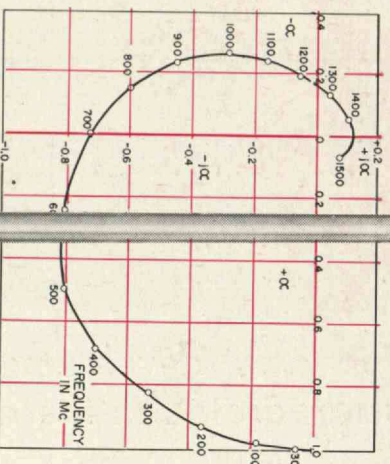
**HOECHST-UHDE CORPORATION**

350 FIFTH AVENUE, NEW YORK 1, N.Y.

8204 Empire State Building



# AN IMPORTANT **NEW** VHF-UHF INSTRUMENT



Plot of Alpha versus frequency for an experimental high-frequency transistor, measured with the Type 1607-A.

★ Measures Directly All Complex Impedance, Admittance, and Transfer-Functions of:

## TRANSISTORS

$\alpha, h_i, h_r, h_i, h_o, f_{h_i}$ , all short-circuit admittance and open-circuit impedance parameters.

## VACUUM TUBES

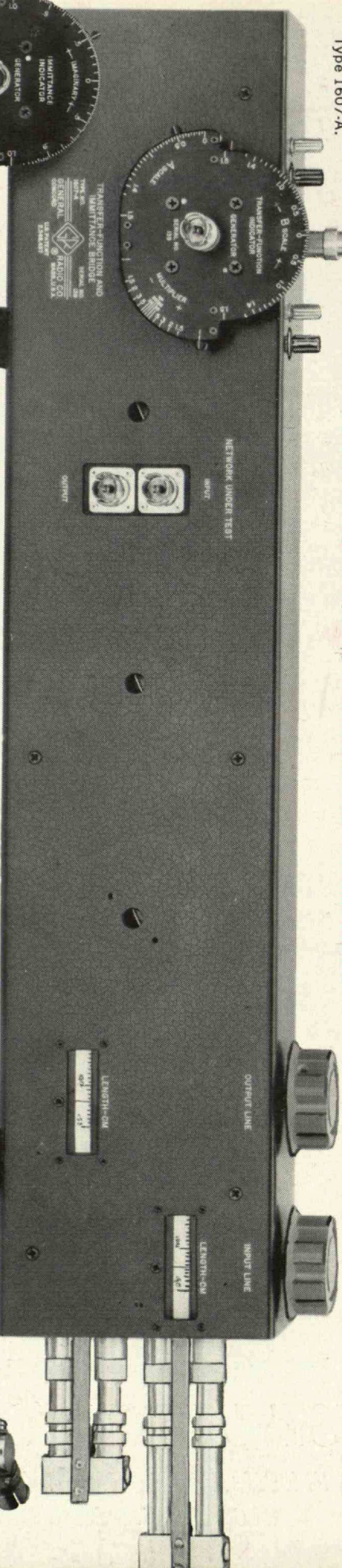
$Y_m, Y_{21}, Y_{12}, Y_{11}, Y_{22}$ , etc.

## THREE- AND FOUR-TERMINAL NETWORKS

$Z_{11}, Z_{22}, Z_{21}, Z_{12}, Y_{11}, Y_{22}, Y_{21}, Y_{12}, I_2/I_1, I_1/I_2, E_2/E_1, E_1/E_2$

★ A Basic Tool for Measurement of: Gain and Phase Shift of Amplifiers, Transmission Circuits, and Other Active and Passive Four-Terminal Networks; Impedance, Admittance, Reflection Coefficient, and VSWR of Components, Coaxial Systems, and other Grounded or Ungrounded Elements.

★ Equally Suited for Advanced Laboratory Investigations and Rapid-Quantity Production Testing



Type 1607-P101 Transistor Mount



## ACCESSORIES AVAILABLE:

Type 1607-P101 Transistor Mount for JETEC-30 0.200-in. pin-circle triode with grounded-base arrangement. \$60.  
Type 1607-P102 Transistor Mount for JETEC-30 0.200-in. pin-circle triode with grounded-emitter arrangement. \$60.

## ACCESSORIES SUPPLIED:

Frequency-Range Extension Unit; Two Calibrated Transfer-Function and Impedance Indicators; Terminations; Standards; 10-db Attenuator; Air Lines; Patch Cords; and other Coaxial Elements.

## TYPE 1607-A

Frequency Range: 25 to 1500 Mc. Biasing Provisions: Built-in for use with external d-c sources. Maximum current, 100 ma.; maximum voltage, 400 volts. Measurement Ranges:			
FUNCTION	RANGE	ACCURACY	
Voltage and current ratios (R)	0-30	2.5 (1 + $\sqrt{R}$ ) % + 0.025	
Transimpedance ( $Z_{21}$ )	0-1500 ohms	2.5 (1 + $\sqrt{\frac{Z_{21}}{50}}$ ) % + 1.25 ohms	
Transadmittance ( $Y_{21}$ )	0-600 mmhos	2.5 (1 + $\sqrt{\frac{Y_{21}}{20}}$ ) % + 0.5 mmho	
Impedance ( $Z_{11}$ )	0-1000 ohms	2.0 (1 + $\sqrt{\frac{Z_{11}}{50}}$ ) % + 1.0 ohm	
Admittance ( $Y_{11}$ )	0-400 mmhos	2.0 (1 + $\sqrt{\frac{Y_{11}}{20}}$ ) % + 0.4 mmho	

Impedance Indicator for all impedance and admittance measurements.

## GENERAL RADIO COMPANY

275 MASSACHUSETTS AVENUE, CAMBRIDGE 39, MASSACHUSETTS

NEW YORK AREA  
Broad Ave., at Linden  
Ridgefield, N. J.  
N. Y. WOH 4-2722  
N. J. Whitney 3-5140

CHICAGO  
6605 W. North Ave.  
Oak Park, Ill.  
Village 8-9400

PHILADELPHIA  
1150 York Rd.  
Arlington, Pa.  
Hancock 4-7419

WASHINGTON, D.C.  
8055 Thirteenth St.  
Silver Spring, Md.  
Juniper 5-1088

SAN FRANCISCO  
1182 Los Alamos Ave.  
Los Altos, Cal.  
Whitecliff 8-8233

LOS ANGELES  
1000 N. Seward St.  
Los Angeles 38, Cal.  
Hollywood 9-6201

IN CANADA  
99 Broadway  
Toronto 15, Ontario  
Cherry 6-2171